

2011 Stormwater Report

NPDES Municipal Stormwater Permit Annual Report for Fiscal Year 2010-2011

October 2011



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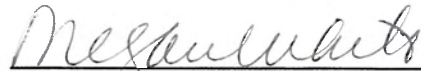
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List of Acronyms

AASHTO	American Association of State Highway and Transportation Officials	MS4	Municipal Separate Storm Sewer System
BMP	Best Management Practice	NCHRP	National Cooperative Highway Research Program
BOD	Biochemical Oxygen Demand	NPDES	National Pollutant Discharge Elimination System
CETIS	Comprehensive Environmental Toxicity Information System	PCB	Polychlorinated Biphenyl
CMMS	Computerized Maintenance Management System	PDA	Personal Digital Assistant
CTR	Commute Trip Reduction	PSD	Particle Size Distribution
CWA	Clean Water Act	QAPP	Quality Assurance Project Plan
EMS	Environmental Management System	RCW	Revised Code of Washington
EPA	Environmental Protection Agency	SMS	Safety Management System
ESA	Endangered Species Act	SPC	Stormwater Policy Committee
FHWA	Federal Highway Administration	SPCC	Spill Prevention, Control, and Countermeasures
FTS	Forest Technology Systems	SWMPP	Stormwater Management Program Plan
GIS	Geographic Information System	SWPPP	Stormwater Pollution Prevention Plan
GPS	Global Positioning System	TAPE	Ecology's Technology Assessment Protocol
HATS	Highway Activity Tracking System	TESC	Temporary Erosion and Sediment Control
HRM	Highway Runoff Manual	TMDL	Total Maximum Daily Load
IDDE	Illicit Discharge Detection and Elimination	TSS	Total Suspended Solids
IVM	Integrated Vegetation Management	UIC	Underground Injection Control
LID	Low Impact Development	USGS	United States Geological Survey
LOS	Level of Service	WRIA	Water Resource Inventory Area
MAP	Maintenance Accountability Process	WSDOT	Washington State Department of Transportation
MPET	Maintenance Productivity Enhancement Tool	WSF	Washington State Ferries

Certification and Signature for Washington State Department of Transportation's National Pollutant Discharge Elimination System Municipal Stormwater Permit 2011 Stormwater Report

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations.



Megan White, P.E.
Environmental Services Office Director
Washington State Department of Transportation

10/21/2011

Date



Chapter 1 - Overview

NPDES Municipal Stormwater Permit

Permit History

Washington State Department of Transportation (WSDOT) is required to comply with federal and state water quality regulations. The primary objective of the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), aims to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Amendments to the CWA in 1987 added stormwater regulations. To carry out the CWA, the National Pollutant Discharge Elimination System (NPDES) was created. Under the NPDES program, the Environmental Protection Agency (EPA) can issue permits regulating stormwater discharges to receiving surface water bodies. In Washington state, EPA delegated permitting authority of the NPDES permit program to the Department of Ecology. In 1995, the Department of Ecology issued WSDOT NPDES municipal stormwater general permits for our stormwater systems within the state's Phase I jurisdictions.

On February 4, 2009, the Department of Ecology issued WSDOT an NPDES and State Waste Discharge Permit for Municipal Stormwater (permit). Compliance with this permit constitutes compliance with the CWA and the State of Washington Water Pollution Control Law (Chapter 90.48 RCW). To remain compliant, WSDOT must implement the requirements described in the permit and the permit-required Stormwater Management Program Plan (SWMPP). The SWMPP, approved by the Department of Ecology prior to permit issuance, appears in Appendix 7 of the permit. Collectively, the permit and SWMPP describe the necessary actions, procedures, and practices for WSDOT to reduce the discharge of pollutants in stormwater runoff to receiving surface water bodies.

Area Covered by Permit

Phase I and II Permit Areas

The permit covers stormwater discharges to receiving surface water bodies from stormwater conveyance systems (MS4s) owned or operated by WSDOT in areas covered by the Phase I Municipal Stormwater Permit and the

Eastern and Western Washington Phase II Municipal Stormwater Permits. The Phase I Municipal Stormwater Permit covers large MS4s, which include any city or county with a population of 250,000 or greater. It also covers medium MS4s, which include any city or county with a population between 100,000 to 249,999. In Washington state, the Phase I Permit covers King, Pierce, Snohomish, and Clark Counties, and the cities of Seattle and Tacoma.

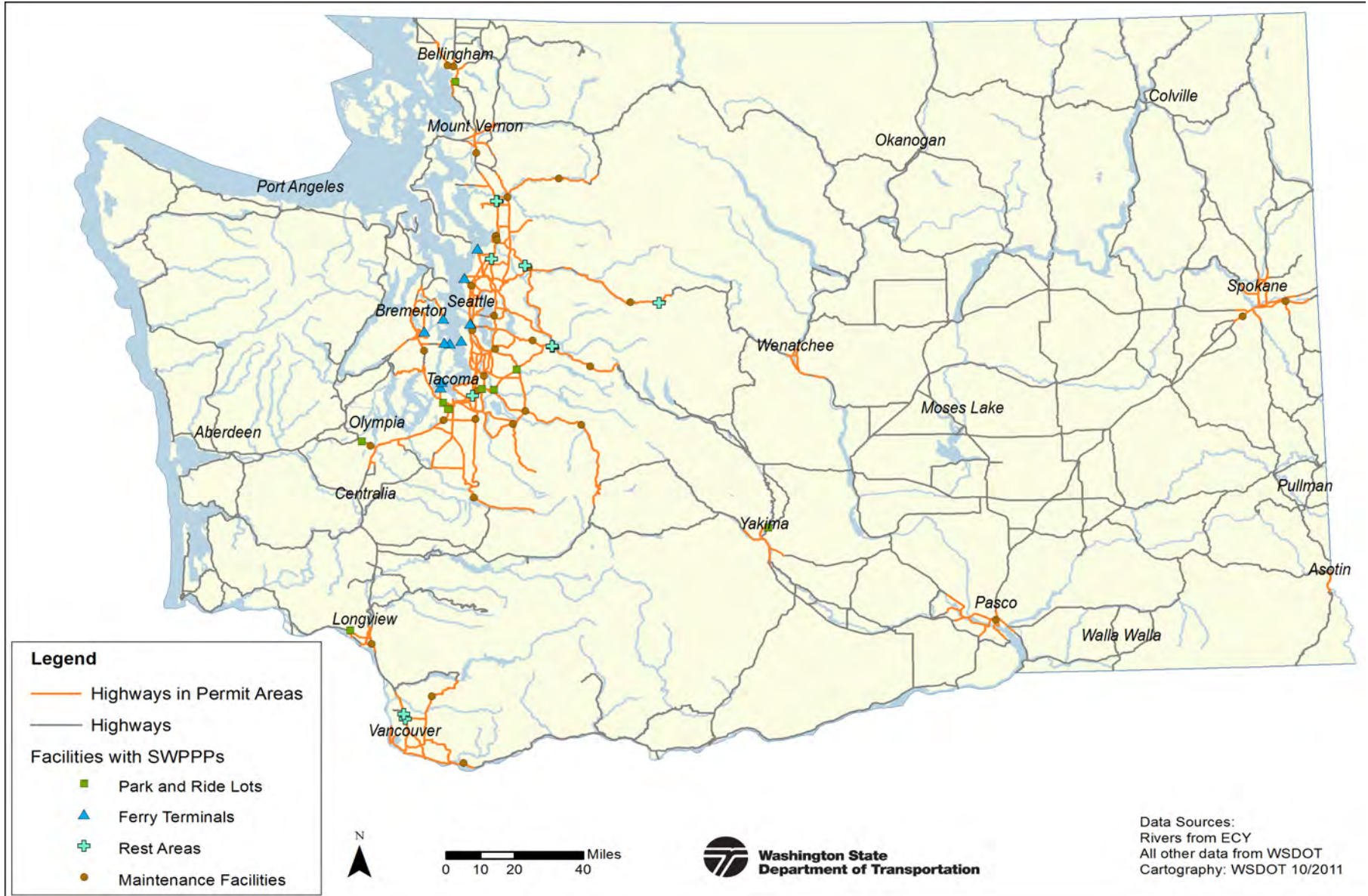
The Phase II Municipal Stormwater Permits cover certain small MS4s. These include urbanized areas and their adjacent urban fringe areas that together have a population of at least 50,000 and a population density of at least 1,000 people per square mile. Small MS4s covered by a Phase II Permit can also include areas outside an urbanized area if the MS4 discharges cause, or have the potential to cause, adverse effects on water quality. These areas must also have a population of at least 10,000, and a population density of at least 1,000 people per square mile. In Washington state, the Phase II Permits cover 99 cities, and urbanized areas in 11 counties.

WSDOT owns and operates MS4s located along about 1,600 miles of highways. As required by the permit, we developed Stormwater Pollution Prevention Plans (SWPPPs) for the 31 maintenance facilities, 11 ferry terminals, 11 rest areas, and 11 park and ride lots which have MS4s that we own and operate. Figure 1 depicts the locations of these facilities within Phase I and II Permit coverage areas. The permit requires WSDOT to implement the obligations in the permit and SWMPP at these facilities.

TMDL Areas

The permit also covers stormwater discharges to any receiving surface water body in Washington state for which there is an EPA-approved Total Maximum Daily Load (TMDL) with load allocations and actions items assigned to WSDOT. While TMDLs may lie outside the Phase I and II Permit coverage areas, many reside completely within these areas. For clarity, a separate map showing WSDOT facilities in TMDL areas appears in Chapter 3.

Figure 1 WSDOT Facilities Located Within Phase I and Phase II Municipal Stormwater Permit Areas



How to Use This Report

Helps Keep WSDOT Accountable

This Stormwater Report serves as WSDOT's Annual Report, an obligation under the permit. It provides a status update on permit compliance and SWMPP implementation from July 1, 2010 to June 30, 2011, our reporting period. The information in the Stormwater Report feeds into WSDOT's *Gray Notebook*, a quarterly performance measure report. WSDOT also uses the Stormwater Report as a self-audit to evaluate and assess the appropriateness and effectiveness of various programs and activities described in the SWMPP. Should WSDOT identify the need to modify the SWMPP, we include the description and justification for each recommendation we make in the Stormwater Report.

Organization of Report

This Stormwater Report, organized into nine chapters, changed slightly compared to the 2010 Stormwater Report to align the chapters with the flow and organization of the permit and SWMPP. Following the overview provided in this chapter, Chapter 2 describes the stormwater program's management framework. Then the status of the Total Maximum Daily Load and Erosion and Sediment Control programs follow in Chapters 3 and 4. Chapter 5 covers low impact development, design and construction of new facilities, retrofits, stormwater features inventory, and illicit discharge detection and elimination. Chapter 6 addresses maintenance topics including levels of service, snow and ice control, vegetation management, facility maintenance, and stormwater pollution prevention plans. Chapter 7 covers the same topics for Washington State Ferry terminals. Chapter 8 covers monitoring efforts and WSDOT's stormwater-related research activities. Finally, Chapter 9 provides updates on WSDOT's public outreach, education, and involvement activities.

Tracking Implementation of Permit Requirements

Tracking Implementation

WSDOT assigned specific tasks required by the permit to members of our staff. The Permit Coordinator regularly reviews our implementation status, interacts with the staff members, and sends reminders to them when a deadline is approaching. Externally, the Permit Coordinator interacts with permit regulators, other municipal permit holders, and various stakeholder groups.

The permit requires WSDOT's Annual Reports to include a description of permit implementation status and, if necessary, explanations for why we failed to meet permit deadlines and how we will meet requirements in the future. To include the most accurate information in the Stormwater Report, staff responsible for implementation contribute a status update for their assigned task or tasks. After the Permit Reporting Lead compiles the information into the Stormwater Report, the report goes through a series of reviews. While the Stormwater Report is not the sole implementation-tracking tool, it helps keep WSDOT accountable to not only the permit administrators at the Department of Ecology, but also policy makers, legislators, advocacy groups, and the general public.

Funding for Permit Implementation

The permit requires WSDOT to request adequate resources from the Legislature to maintain compliance with the permit. WSDOT must include those budget requests in our Stormwater Report. WSDOT first submits an agency budget request to the Office of Financial Management and Governor. The Governor then submits a transportation budget to the Legislature recommending how to allocate funds. Table 1 shows the Governor's recommendations to the Legislature for both the 2009-2011 Biennium and the 2011 Supplemental budgets for implementing the permit. It also shows the amounts the Legislature originally approved for permit implementation.

Table 1 Governor’s Budget and Legislature Approvals for 2009-2011 Permit Implementation

Permit Implementation Funds	2009-2011 Biennium	2011 Supplemental	Total
Requested	\$1,500,000 ¹	\$4,960,000	\$6,460,000
Approved	\$1,500,000 ¹	\$2,425,000	\$4,275,000 ²

1. This includes \$750,000 specifically for funding stormwater-related maintenance activities.
2. This includes \$350,000 of reappropriated funds which were unspent during the 2007-2009 biennium.

In addition to the approved amounts in the table above, several WSDOT programs receive base amounts of ongoing funding to implement permit requirements. The permit requires WSDOT to track the cost of implementing the permit and SWMPP. Table 2, below shows an estimate of how much WSDOT spent implementing the permit and SWMPP requirements during this reporting period.

Table 2 Estimated Expenditures for Permit Implementation for the 2009-2011 Biennium

Implementation Tasks	Estimated Expenditures for Permit Implementation for the 2009-2011 Biennium
Permit Coordination	\$189,800
Stormwater Program Management and Oversight	\$236,200
Information Technology Database Maintenance	\$1,079,300
Total Maximum Daily Load Management	\$242,800
Construction Site Pollution Prevention Management	\$253,700
Stormwater Features Inventory	\$314,600
Illicit Discharge Detection and Elimination	\$300,600
Stormwater Retrofit Prioritization	\$555,000
Monitoring and Research	\$2,010,500
Annual Reporting	\$136,500
Washington State Ferries	\$81,600
Highway and Facility Maintenance	\$28,667,500
Stand-alone Stormwater Retrofit	\$841,000
Highway Runoff Program	\$450,000
Total	\$35,359,100

WSDOT also spends money on mitigating adverse stormwater runoff affects by building stormwater treatment and flow control best management practices (BMPs) as a part of highway construction projects. During the 2009-2011 biennium, WSDOT spent about \$3.43 billion on our Highway Construction Program statewide, a portion of which covered stormwater-related expenditures. However, our accounting systems do not track individual stormwater-related expenditures in overall project costs, so generating stormwater mitigation costs is very difficult. Based on WSDOT's *2009 Project Environmental Mitigation Costs Case Studies* report stormwater mitigation can account for between about 2.5 to 24 percent of an overall project's costs. A specific project's stormwater mitigation costs can depend on the location of the project related to urban areas, whether it is in eastern or western Washington, the size of the project, and its proximity to receiving water bodies, among other factors.

Additional Triggered Reporting Items

Responsibilities of the Permittee

Under Special Condition S3 of the permit, WSDOT must notify the Department of Ecology if we rely on another governmental entity to satisfy any of our obligations under the permit. The notification must include the name of the entity and the requirements that they will perform. During this reporting period, WSDOT worked with the Department of Ecology's Environmental Assessment Program to help satisfy the permit's monitoring preparation requirements. The Environmental Assessment Program helped WSDOT:

- Prepare draft Quality Assurance Program Plans.
- Collect total suspended solids and particle size distribution samples to help select BMP monitoring sites.
- Design and set up monitoring sites.
- Purchase equipment needed for monitoring.
- Negotiate contracts with analytical labs.

While WSDOT owns and operates 11 park and ride lots with MS4s, we own many park and ride lots maintained by other governmental entities. We developed a list of entities we rely on to operate and maintain our park and rides lots; however, we still need to determine which of those park and ride lots have MS4s. The permit requires WSDOT to inventory and document all known MS4s by March 2014. Thus, developing a list of entities operating and maintaining our park and ride lots with MS4s will continue as we complete our inventory. Currently, WSDOT

relies on the following entities to operate and maintain park and ride lots we own located within areas covered by the permit:

- C-Tran
- City of Kelso
- Community Transit
- Intercity Transit
- King County Metro
- Kitsap Transit
- Pierce Transit
- Skagit Transit
- Spokane Transit Authority

WSDOT's Washington State Ferries Division (WSF) also has an agreement with Kitsap Transit and the city of Bremerton to maintain the Bremerton Ferry Terminal. Kitsap Transit satisfies the permit's requirements by maintaining the upper part of the ferry terminal which is predominantly used by busses and pedestrians. The city of Bremerton satisfies the permit's requirements by maintaining the stormwater catchbasin and vault system at the terminal.

Compliance with Standards for Discharges

The permit requires WSDOT to include a summary of any actions taken regarding Special Condition S4 of the permit in our Annual Stormwater Report. These actions include notifying the Department of Ecology about any discharge from WSDOT's MS4 that causes or contributes to a known or likely violation of water quality standards in a receiving surface water body. The permit also requires WSDOT to include summaries of any adaptive management strategies, implementation of these strategies, and the results of any monitoring, assessment, or evaluation conducted for adaptive management related to Special Condition S4. In this reporting period, WSDOT had no knowledge of discharges that required Special Condition S4 notification to the Department of Ecology. We have not had any incidents requiring notification under this special condition to date.

Notification of Spills

According to General Condition 3 in the permit, if WSDOT knows of a spill into its MS4 which could constitute a threat to human health, welfare, or the environment, we must notify the Department of Ecology. WSDOT is required to notify the Department of Health as well, if the spill might cause bacterial contamination of shellfish. In this reporting period, WSDOT notified the Department of Ecology on two occasions for spills.

The first notification, on August 31, 2010, described a fuel spill on I-5 near I-405. Approximately 30 to 50 gallons of fuel spilled and leaked through the expansion joints of the freeway and into the drainage system leading to the Duwamish River. The spill was a result of a collision involving a semitruck. To minimize the threat of the spill, one of the semitruck's fuel tanks was drained and WSDOT placed a boom in the river to catch any fuel.

The second notification occurred on January 20, 2011. On State Route 3, just north of Kitsap Way in Bremerton, a diesel spill occurred. Approximately 15 gallons of fuel spilled into the storm drain leading to Puget Sound. Additionally, 30 to 50 gallons of fuel spilled into either Chico Creek or Kitsap Creek.

Non-compliance Notification

In the event WSDOT fails to comply with obligations of the permit, the permit requires WSDOT to notify the Department of Ecology. Under General Condition 20 of the permit, this notification needs to include a description of the non-compliance, the time period for which it is expected to continue, and actions taken or planned to reduce, eliminate, and prevent reoccurrence of the non-compliance. In this reporting period, there were no instances requiring WSDOT to submit a notification to the Department of Ecology regarding non-compliance with the permit.



Chapter 2 - Stormwater Program Management

Stormwater Management Responsibilities

WSDOT Manages Stormwater

Traditionally, WSDOT's stormwater management program focused on maintaining safe driving conditions and preserving the condition of roadways. While safety and preservation continue to be top priorities, WSDOT has also made protecting and restoring the environment an important goal. With our highways, rest areas, ferry terminals, maintenance facilities, and park and ride lots, WSDOT operates and maintains more than 40,000 acres of paved surfaces statewide. WSDOT recognizes that stormwater runoff from these transportation facilities can contribute to water quality problems.

To minimize the negative effects of stormwater runoff from our facilities, WSDOT manages stormwater by implementing activities described in our Stormwater Management Program Plan and using BMPs. A stormwater BMP is a structure or operational practice that can prevent or reduce pollution in stormwater runoff, control runoff volumes and peak flows, or perform both functions. Managing stormwater that comes from WSDOT facilities helps us fulfill our environmental stewardship commitment, as well as regulatory obligations.

Offices Responsible for Implementation

WSDOT's Headquarters Offices work with the six Region Offices, and the Washington State Ferries Division to implement the permit. In the Headquarters Offices, the Environmental Services Office, in coordination with the Stormwater Policy Committee, initiates implementation of the permit and guides policy development for stormwater management. The Headquarters Maintenance and Operations Program and Design Office's Hydraulics Branch provide stormwater-related technical support to the other offices. Region Offices and Washington State Ferries are generally responsible for implementing the permit in the field. However, some headquarters programs perform permit-required actions in the field as well. While Washington State Ferries is responsible for most stormwater management activities at the ferry terminals, the Region Offices focus on stormwater-related construction and maintenance activities for the rest of the facilities covered in the permit.

Stormwater Policy Committee

The Stormwater Policy Committee (SPC) is chaired by the Environmental Services Office Resource Programs Branch Manager. WSDOT created it to:

- Help guide stormwater management policy and deliberations with permitting agencies.
- Provide framework for communication, coordination, and cooperation among the offices responsible for implementing the permit.
- Recommend preferred approaches to meet regulatory obligations.
- Guide preparation of the biennial stormwater work plan.
- Evaluate the Stormwater Management Program Plan's effectiveness.
- Assist in resolving problems and conflicts related to stormwater.

A subset of the SPC members work on preparing the budget for stormwater management and permit implementation. WSDOT uses the budget preparation efforts to set implementation priorities and identify the resources necessary to support permit implementation. This subset of SPC members briefs the full committee on the process and outcomes.

The permit requires the SPC to meet quarterly. In this reporting period, the SPC met on August 11, 2010, January 18, 2011, and May 17, 2011. Instead of holding a meeting in October 2010, the SPC members were tasked with reviewing the Municipal NPDES 2010 Annual Stormwater Report and a legal memorandum from the Attorney General's Office regarding local government regulatory authority over WSDOT facilities.

Intergovernmental Coordination

WSDOT coordinates with local governments, multiple agencies, tribes, and groups that operate in areas where there are WSDOT facilities with MS4s. WSDOT values intergovernmental coordination, especially in identifying areas needing retrofit or maintenance, removing illicit connections, responding to spills, and conducting public outreach and education.

When our stormwater conveyance system connects with a local government's system, the local government may elect to assess a stormwater utility fee on WSDOT. These fees contribute to development and implementation of those municipalities' stormwater management programs to address stormwater discharges related to WSDOT. We also have a memorandum of understanding with The Association of Washington Cities that defines maintenance responsibilities for highways that are also city streets, and some of the MS4s associated with the highways located within the cities.

WSDOT's Resource Agency Project Liaison Program provides staff or funding for staff at several state and federal agencies who are dedicated to transportation projects. The liaisons assist WSDOT and local transportation agencies on issues like early coordination, the Endangered Species Act (ESA), and environmental review. WSDOT has a similar program for tribes. Although some of the liaison positions have been eliminated or have been held vacant due to budget and workload reductions, WSDOT continues to support liaison positions with agencies and the tribes, as required by the permit.

WSDOT actively participates in the development and review process for TMDLs for which WSDOT facilities or operations are identified as contributing sources. We also meet with the Department of Ecology at least once a year to discuss TMDL implementation. Chapter 3 contains a detailed account of WSDOT's actions regarding the TMDL development process.

Stormwater Management Guidance Documents and Manuals

WSDOT revises and updates our manuals and procedures regularly. The permit requires WSDOT to report significant changes, related to stormwater management, made to these documents. The summaries below describe the relevant changes to our manuals. The subsection on the SWMPP includes WSDOT's proposed revisions that we welcome the Department of Ecology to consider for approval.

Stormwater Management Program Plan

The permit requires WSDOT to implement a Stormwater Management Program Plan approved by the Department of Ecology. The Department of Ecology approved our SWMPP and included it as Appendix 7 of the permit. The plan describes the necessary actions, procedures, and practices for WSDOT to carry-out to reduce the discharge of pollutants in stormwater runoff to receiving surface water bodies.

WSDOT proposes to change the SWMPP pertaining to sweeping frequency at ferry terminals. SWMPP Section 7.3.5 requires WSF to ensure “sweeping services are conducted on a monthly basis.” WSF has proposed to change the sweeping schedule to quarterly instead of monthly. The basis for this change comes from a review of BMPs used by other transit agencies, including Kitsap and Snohomish Counties, recommendations about sweeping frequency from the Federal Highway Administration (FHWA) and the Federal Transit Agency, the amount of traffic at WSF terminals, and internal inspections. Sweeping the terminals will be closely monitored to assure that sweeping four times a year will be adequate to control the amount of sediment and debris entering the stormwater management systems at ferry terminals.

Washington State Ferries Division Safety Management System Manuals

The Safety Management System Manuals provide policies and procedures for complying with international, federal, state, and local laws related to maintenance and operations of WSF facilities. These documents cover safety, security, environmental protection, and emergency preparedness and response.

In this reporting period, an additional procedure was developed in accordance with the programmatic ferry terminal SWPPP and integrated into the Safety Management System. The new procedure addresses activities such as stormwater inspections and record keeping. Existing procedures already cover solid waste disposal, transporting hazardous materials, emergency response and preparedness, spill response, oil container transfer and disposal, and pest management.

Chapter 3 - Total Maximum Daily Loads

Total Maximum Daily Loads

The Water Quality Improvement Project process, established by the CWA, requires states to identify sources of pollution in waters that fail to meet state water quality standards. It also requires states to develop cleanup plans to address those pollutants. In Washington state, when water quality data indicates a water body segment does not meet water quality standards for a specific pollutant, the Department of Ecology adds it to the Water Quality Assessment list as a Category 5 water body, also known as a 303(d)-listed water body. The EPA requires the Department of Ecology to develop TMDLs for each of the stream segments on the 303(d) list. A TMDL identifies pollution problems in the watershed, specifies how much pollution needs to be reduced or eliminated, and provides targets and strategies to achieve clean water.



Figure 2

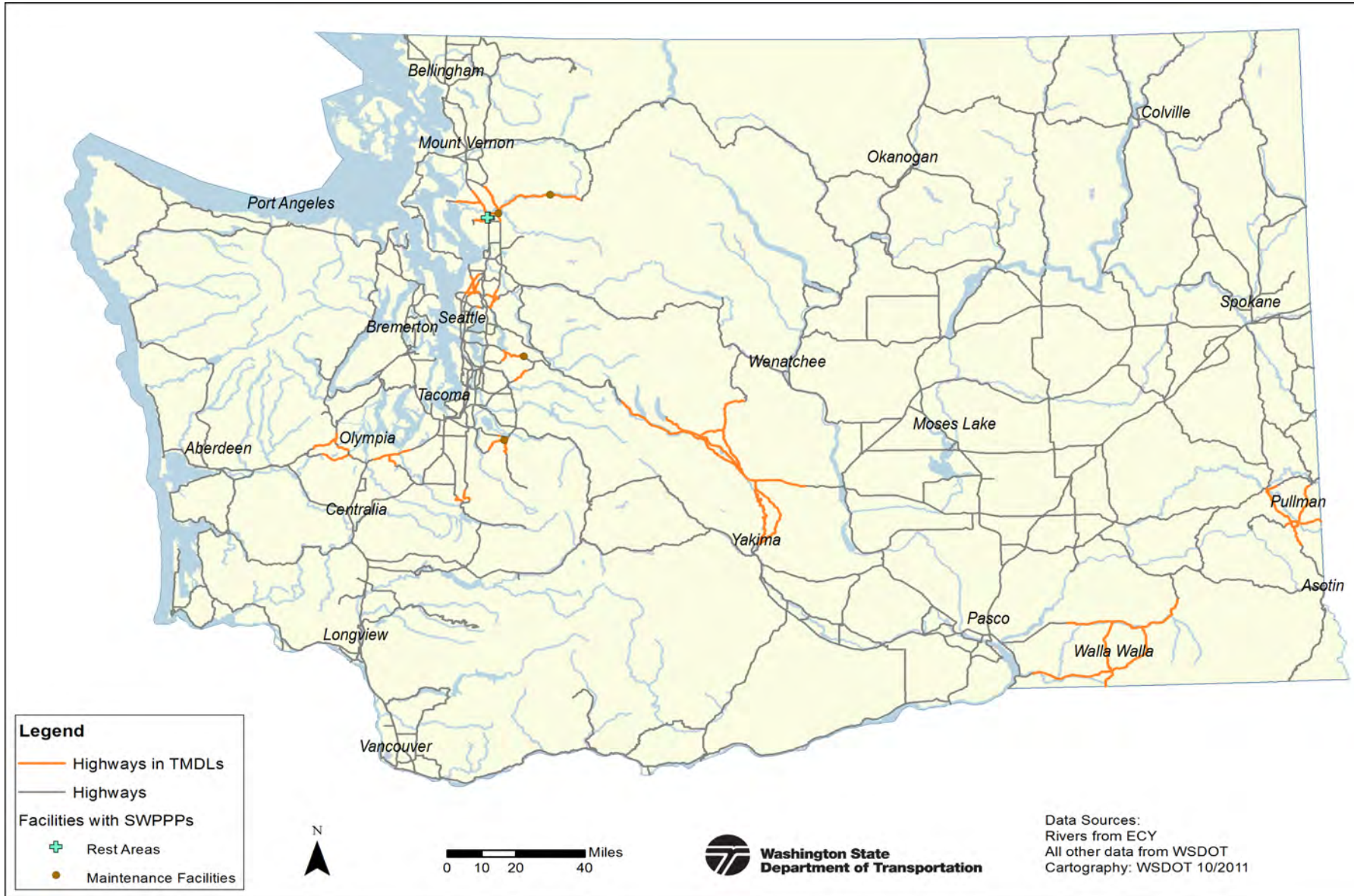
WSDOT installed pet waste stations at the I-5 Smokey Point rest areas, as required by the Stillaguamish River TMDL (March 2011).

In developing a TMDL, the Department of Ecology plans and conducts water quality technical studies on the impaired water bodies. Once completed, the Department of Ecology works with stakeholders to prepare an implementation strategy that identifies pollution sources in the watershed and determines to what extent the pollution needs to be reduced to meet state water quality standards. These documents are submitted to EPA for approval. When EPA approves a TMDL, the Department of Ecology develops a water quality implementation plan to identify responsible parties, specific tasks, and timelines for achieving water quality standards. For example, a task assigned to WSDOT in a fecal coliform TMDL may include installing a pet waste station at a rest area.

TMDL Areas Covered by the Permit

The permit requires WSDOT to comply with EPA-approved TMDLs where WSDOT has been identified as a stakeholder or responsible party. The permit currently covers 11 TMDLs statewide. Figure 2 depicts WSDOT facilities within these TMDL areas. The Department of Ecology must add new TMDLs approved by EPA that identify WSDOT as a stakeholder or responsible party to the permit at a minimum of every 18 months. In November 2011, the Department of Ecology will modify the permit to include new applicable TMDLs.

Figure 3 WSDOT Facilities within TMDL Areas Covered by the Permit



Implementing TMDL Requirements

TMDL Program

WSDOT's TMDL Program addresses stormwater runoff from our transportation infrastructure that discharges to the 303(d)-listed receiving surface water bodies within TMDL boundaries. The program focusses on compliance with the action items and applicable timelines included in the 11 TMDLs currently listed in the permit. Where particular requirements were considered inappropriate or ineffective based on the current state of knowledge, WSDOT's TMDL Lead collaborated with the Department of Ecology to develop more appropriate and effective approaches for meeting the TMDL goals.

WSDOT's TMDL Program also developed a draft programmatic approach to systematically address and implement actions related to fecal coliform TMDLs. Currently, 9 of the 11 TMDLs covered by the permit address fecal coliform. WSDOT expects more fecal coliform TMDLs to be added to the permit in November 2011. We intend to pursue a programmatic approach to streamline the development and inclusion of applicable and appropriate action items in implementation plans for fecal coliform TMDLs.

WSDOT facilities can be the source of fecal coliform in locations like pet walking areas at rest stops or under bridges where birds roost. However, our transportation infrastructure more often functions as a conveyance of the bacteria from adjacent land uses through natural drainage, an illicit discharge, or an illegal connection. The actions contained in the programmatic approach include identifying sources of fecal coliform and remedying sources and maintenance issues found in our right of way within TMDL areas.

WSDOT's Involvement in TMDL Development

Another aspect of WSDOT's TMDL Program involves participating in TMDLs under development. The permit strongly encourages WSDOT to participate in developing TMDLs in which we are identified as a stakeholder or responsible party. During this reporting period, the program was involved in several TMDL development processes. After reviewing the Department of Ecology's TMDL project list, WSDOT established priorities for our level of involvement in these developing TMDLs. We attended TMDL development and adaptive management meetings, reviewed and provided comments on draft TMDL documents, and collaborated with the Department of Ecology to develop actions and applicable timelines for WSDOT. WSDOT coordinated with the Department of

Ecology on the following 23 TMDLs under development in this reporting period.

- Bear-Evans (temperature, dissolved oxygen, fecal coliform)
- Burnt Bridge (temperature, dissolved oxygen, fecal coliform)
- Clarks Creek (dissolved oxygen)
- Crystal Creek (fecal coliform, ammonia, chlorine, BOD)
- Deschutes River (temperature, dissolved oxygen, fecal coliform, PCBs, pH, phosphorus)
- Green River (temperature)
- Hangman Creek Watersheds (temperature, fecal coliform, turbidity/TSS)
- Liberty Bay (fecal coliform)
- Newaukum Creek (temperature)
- Oakland Bay (fecal coliform)
- Palouse River (fecal coliform)
- Puyallup River (fecal coliform)
- Sinclair-Dyes Inlets Tributaries (fecal coliform)
- Snoqualmie River (temperature)
- Spokane River/Lake Spokane (dissolved oxygen)
- Teanaway River (temperature)
- Tuccannon River and Pataha Creek (temperature)
- Upper Naches (temperature)
- Upper Yakima River Tributaries (temperature)
- Whatcom, Squalicum, and Padden Creeks (temperature)
- Whatcom Creek (fecal coliform)
- Wilson Creek Sub-basin (fecal coliform)
- Yakima Toxic Project (PCBs, pesticides)

Implementation Status for Existing TMDLs

The permit requires WSDOT to summarize actions required by TMDLs and the status of compliance with each action in our Stormwater Report. The table below provides this required information for actions above and beyond our implementation of pollution prevention measures for highway runoff as required by the SWMPP and permit in all applicable areas covered by the permit.

Table 3 TMDL Implementation Summary

TMDL Name	WSDOT's Required Actions	Implementation Deadlines	Status of Compliance
Henderson Inlet Watershed	Update WSDOT stormwater facilities on Southbound I-5 at milepost 110.	6/30/2017	The I-5, West of Carpenter Rd, Stormwater Retrofit Project is funded. Construction is expected to begin in June or July 2013 with scheduled completion by the end of 2013.
Issaquah Creek Basin¹	Inventory highway discharge locations within the TMDL boundary and implement IDDE and basic source identification for fecal coliform.	Complete initial inventory and provide map of discharge points, IDDE's identified, and potential source locations in 2011.	Discharge inventory began on 5/21/09, with expected completion by fall 2011. A map of discharge points, IDDEs and sources is expected to be completed by December 30, 2011.
	Apply best management practices from SWMPP or perform remediation to correct bacteria discharges.	As needed	Will implement as needed
	Provide bacterial pollution information collected where WSDOT's MS4 connects with another jurisdiction's MS4.	As needed	Will implement as needed
	Apply fecal coliform programmatic approach within TMDL areas. ²	Provide brief report to the Department of Ecology on the discharge point prioritization process included in the fecal coliform programmatic approach (GIS analysis tool) once it is developed. Report initial identified sites for diagnostic monitoring to the Department of Ecology in 2011.	Revised the draft fecal coliform programmatic approach in June 2011. WSDOT seeking Department of Ecology approval to remove discharge point prioritization and diagnostic monitoring action items since they no longer apply.

TMDL Name	WSDOT's Required Actions	Implementation Deadlines	Status of Compliance
Little Bear Creek ¹	Inventory highway discharge locations within the TMDL boundary and implement IDDE and basic source identification for fecal coliform.	Complete initial inventory and provide map of discharge points, IDDE's identified, and potential source locations in 2011.	Discharge inventory began on 6/1/09 with expected completion by fall 2011. A map of surface water discharge points, IDDEs and sources is expected to be completed by September 2011.
	Apply best management practices from SWMPP or perform remediation to correct bacteria discharges.	As needed	Will implement as needed
	Provide bacterial pollution information collected where WSDOT's MS4 connects with another jurisdiction's MS4.	As needed	Will implement as needed
	Apply fecal coliform programmatic approach within TMDL areas. ²	Provide brief report to the Department of Ecology on the discharge point prioritization process included in the fecal coliform programmatic approach (GIS analysis tool) once it is developed. Report initial identified sites for diagnostic monitoring to the Department of Ecology in 2011.	Revised the draft fecal coliform programmatic approach in June 2011. WSDOT seeking Department of Ecology approval to remove discharge point prioritization and diagnostic monitoring action items since they no longer apply.
Nisqually Watershed	Install a pet waste station on the dike at McAllister Creek or close access to the dike.	Complete by February 2008 (in advance of permit issuance)	Completed 3/4/10
	Maintain tide gates 1-6 every other year per WSDOT maintenance program.	2010, 2012, 2014	Not applicable this reporting period
	Improve the discharge to McAllister Creek by building bioswales and placing compost on the highway shoulders.	Complete by May 2006 (in advance of permit issuance)	Completed May 2006
South Fork Palouse River ¹	Inventory highway discharge locations within the TMDL boundary and implement source identification for fecal coliform.	Complete by March 2014	Not started yet
	Apply best management practices from SWMPP or perform remediation to correct bacteria discharges.	As needed	Will implement as needed
	Apply fecal coliform programmatic approach within TMDL boundary. ²	If determined necessary	Will implement if determined necessary
	Inspect underside of Highway 195 bridge in Colfax for pigeon nests and feces.	With annual bridge inspection	Completed 7/7/11

TMDL Name	WSDOT's Required Actions	Implementation Deadlines	Status of Compliance
South Prairie Creek	Inventory highway discharge locations within the TMDL boundary and implement source identification for fecal coliform.	Complete in 2010	Discharge inventory began on 6/2/10 and completed on 8/4/10. Source identification performed during discharge inventory.
	Apply best management practices from SWMPP or perform remediation to correct bacteria discharges.	As needed	Will implement as needed
	Apply fecal coliform programmatic approach within TMDL boundary. ²	If determined necessary	Will implement if determined necessary
	WSDOT will use \$20K to implement discharge inventory, IDDE, and source identification beginning July 2010. Any remaining money will be used to remediate fecal coliform sources within the right of way or, if needed, to implement the fecal coliform programmatic approach.	Begin work in 2010	Inventory work completed on 8/4/10 (see above). Follow-up on IDDE's and sources found during discharge inventory complete by 3/8/11. A map of discharge points, IDDEs and sources submitted to the Department of Ecology on 3/10/11.
	Participate in annual adaptive management meetings.	Annually	Completed 3/10/11
Stillaguamish River and Protage Creeek ¹	Inventory highway discharge locations within the TMDL boundary and implement IDDE and basic source identification for fecal coliform.	Complete initial inventory and provide map of discharge points, IDDE's identified, and potential source locations in 2012.	Discharge inventory began on 5/27/09 and completed on 4/25/11. Follow-up work on IDDE's and sources still needs to be completed. A map of discharge points, IDDEs and sources is expected to be completed no later than December 31, 2012.
	Apply best management practices from SWMPP or perform remediation to correct bacteria discharges.	As needed	Will implement as needed
	Provide bacterial pollution information collected where WSDOT's MS4 connects with another jurisdiction's MS4.	As needed	Will implement as needed
	Apply fecal coliform programmatic approach within TMDL areas. ²	Provide brief report to the Department of Ecology on the discharge point prioritization process included in the fecal coliform programmatic approach (GIS analysis tool) once it is developed. Report initial identified sites for diagnostic monitoring to the Department of Ecology in 2012.	Revised the draft fecal coliform programmatic approach in June 2011. WSDOT seeking Department of Ecology approval to remove discharge point prioritization and diagnostic monitoring action items since they no longer apply.
	Install pet waste management stations with educational signage at I-5 rest areas.	Install by 2013	Installed 3/2011

TMDL Name	WSDOT's Required Actions	Implementation Deadlines	Status of Compliance
Swamp Creek ¹	Inventory highway discharge locations within the TMDL boundary and implement IDDE and basic source identification for fecal coliform.	Complete initial inventory and provide map of discharge points, IDDE's identified, and potential source locations in 2011.	Discharge inventory began on 6/4/09 and completed on 3/16/11. A map of surface water discharge points, IDDEs and sources submitted to the Department of Ecology on 6/1/11. Additional maps showing all discharge types and all incoming discharges submitted to the Department of Ecology on 8/3/11, after completion of data processing.
	Apply best management practices from SWMPP or perform remediation to correct bacteria discharges	As needed	Will implement as needed
	Provide bacterial pollution information collected where WSDOT's MS4 connects with another jurisdiction's MS4.	As needed	Will implement as needed
	Apply fecal coliform programmatic approach within TMDL areas. ²	Provide brief report to the Department of Ecology on the discharge point prioritization process included in the fecal coliform programmatic approach (GIS analysis tool) once it is developed. Report initial identified sites for diagnostic monitoring to the Department of Ecology in 2011.	Revised the draft fecal coliform programmatic approach in June 2011. WSDOT seeking Department of Ecology approval to remove discharge point prioritization and diagnostic monitoring action items since they no longer apply.
Totten/Eld Inlets Tributaries ¹	Inventory highway discharge locations within the TMDL boundary and implement source identification for fecal coliform.	Complete by March 2014	Some inventory work completed within the TMDL boundary, but a focused effort has not started yet. A focused effort has also not started yet for source identification.
	Apply best management practices from SWMPP or perform remediation to correct bacteria discharges	As needed	Will implement as needed
	Apply fecal coliform programmatic approach within TMDL boundary. ²	If determined necessary	Will implement if determined necessary
	Address drainage issues affecting Schneider Creek.	Original project complete by November 2007.	Original project completed in November 2007. In January 2011, WSDOT was made aware of a drainage issue that wasn't resolved during the original project. On March 9, 2011 WSDOT maintenance staff performed excavation work to modify the drainage and resolved the problem.

TMDL Name	WSDOT's Required Actions	Implementation Deadlines	Status of Compliance
Upper Yakima	Continue to maintain roads and roadside ditches to prevent sediment from entering area waterways.	On-going	On-going
Walla Walla ¹	The US 12 Project phases 7 and 8 will re-route 97 percent of the highway's traffic volume to the plateau located well above the Walla Walla River. ³	Dependent on funding	Dependent on funding. Phase 7 funded for design, but project on hold pending availability of construction funding.
	Where feasible, WSDOT will implement infiltration and/or dispersion to address the pollutants covered under this TMDL.	On-going	On-going
	WSDOT will follow the current Integrated Roadside Vegetation Management Plan (South Central Region, Area 4) within the Walla Walla TMDL boundary.	On-going	On-going

1. For information regarding WSDOT's fecal coliform programmatic approach, please refer to the TMDL Program section on page 19.

2. WSDOT and the Department of Ecology developed new, more appropriate and effective action items and timelines based on our current state of knowledge, for the Issaquah Creek Basin, Little Bear Creek Basin, South Fork Palouse River, Stillaguamish River and Portage Creek, Swamp Creek, Totten/Eld Inlets Tributaries, and the Walla Walla TMDLs. Action items and timelines are reflected in this table.

3. The new alignment crosses the Touchet River with a span that accommodates the 100 year floodplain and all stormwater generated from this crossing will be conveyed to treatment areas outside of the floodplain. The remainder of the alignment traverses high ground in a highly degraded condition (dominated with invasive weeds with very little native). The stormwater treatment method for the alignment will be infiltration and/or dispersion. The old US 12 alignment located near the Walla Walla River, from Nile Mile Hill to the confluence of the Columbia River will occupy local traffic only.

One of the action items required for the Nisqually Watershed TMDL involves performing maintenance on the tide gates every other year. When WSDOT maintenance staff inspected the tidegates on June 22, 2010, there was confusion regarding which tidegates WSDOT needed to maintain. We discussed our concerns with the Department of Ecology and will provide them a list of tidegates that WSDOT is responsible for once we conduct the next inspection in 2012.

In addition to the information in the table above, the permit requires WSDOT to summarize any relevant actions we implemented that affect stormwater discharges to water body segments subject to TMDLs covered in the permit. Relevant actions can include BMP installation, retrofit projects, pollution prevention activities above and

beyond the permit requirements, and post-construction stormwater monitoring. WSDOT performed the following relevant actions in three of the TMDL areas currently covered in the permit during this reporting period:

- Within the Henderson Inlet Watershed TMDL, we constructed a stormwater treatment wetland and a detention pond. These were part of the I-5, Martin Way Bike Lanes Project near milepost 109 and were designed to treat stormwater.
- Along US Highway 12, in the Walla Walla TMDL, WSDOT constructed infiltration ponds, infiltration trenches, swales, and other low impact development with check dams. This project runs from Frenchtown to Walla Walla and each BMP treats stormwater.
- In the Stillaguamish River & Portage Creek TMDL, we constructed compost amended vegetated filter strips, media filter drains, a stormwater treatment wetland and a biofiltration swale along I-5 to treat stormwater. This project runs from Marysville to the Stillaguamish River.

Figure 4

WSDOT Maintenance staff completed excavation work along US 101 to alleviate drainage issues as required by an action item for the Totten/Eld Inlets TMDL (3/9/11).



Chapter 4 - Construction Site Stormwater Pollution Prevention

Spill Prevention, Control, and Countermeasures



Figure 5

WSDOT can use hydro seed to help stabilize steep slopes. However, hard rain caused rilling on this steep slope that had been hydro seeded at the Westbound Nalley Valley Project (March 2011).

WSDOT requires its construction contractors to prepare a Spill Prevention, Control, and Countermeasures (SPCC) plan for each construction project. Guidance for writing these plans is provided in WSDOT's *Standard Specifications, Highway Runoff Manual*, and on the WSDOT Environmental Services Hazardous Materials Program's website. SPCC plans must be submitted and approved by WSDOT before construction activity begins. During construction, a copy of the plan is required to remain on site. WSDOT requires contractors to have a certified Erosion and Sediment Control Lead trained on spill prevention.

The permit requires WSDOT to verify that the SPCC plan is available on site. During the annual fall Temporary Erosion and Sediment Control assessment, WSDOT verifies whether a SPCC plan exists on site for each project. In the 2010 assessments, 21 of the 22 projects assessed had an SPCC plan within a reasonable distance of the project site. However, the project without an SPCC plan on site did have spill kits available throughout the project site, showing some level of spill response preparedness.

Erosion and Sediment Control

Erosion Control Program

Highway construction projects often expose and move significant amounts of soil. This increases the potential for erosion to occur on or near the construction site which can damage the project or adjacent property. Erosion at construction sites can increase the cost and time needed to complete projects. Erosion can also create dangerous work site conditions and lead to polluted stormwater runoff caused by excess sediment. This can then degrade water quality and habitat in receiving surface water bodies.

WSDOT's Erosion Control Program addresses stormwater runoff from construction activity. The program primarily focuses on preventing sediment and other pollutants associated with construction activity from adversely affecting soil, air, and water quality. The Erosion Control Program also:

- Trains site designers and inspectors to proactively prevent erosion.
- Provides training and technical assistance to construction staff.
- Develops contract language to ensure construction contractors control erosion effectively.
- Performs statewide erosion control assessments of project construction sites.
- Monitors water quality during construction to ensure compliance with permit requirements.

Temporary Erosion and Sediment Control Plans

Effective control of construction site erosion depends on good site design. Trained designers develop temporary erosion and sediment control (TESC) plans for each project. TESC plans consist of a narrative and site plan sheets establishing when and where specific BMPs will be used to minimize and protect bare soils from erosion.

WSDOT created a TESC Planning Tool to help designers develop consistent, complete, and contractually enforceable plans. The tool prompts the designer to review requirements, analyze risks, select BMPs to address those risks, and identify contractual tools. The planning tool helps ensure consistency in the plan format by automatically organizing and writing the narrative of the plan, and by checking that all sections required in the plan are complete. The tool is currently having usability problems because it is not compatible with new operating systems. Therefore, WSDOT is redeveloping the tool as a web application, which will be compatible with new operating systems as well as more user-friendly, and thus more effective.

WSDOT also provides guidance on how to implement TESC plans through our *Standard Specifications*, which are included in contract documents. Projects requiring specialized solutions prepare more detailed contract specifications. Additionally, WSDOT's erosion control specialists can help designers identify BMP solutions for unusually difficult situations.

To ensure designers use the most effective and reliable erosion control BMPs, WSDOT routinely evaluates new commercial products and methods. Products and methods approved by the Department of Ecology and WSDOT

Erosion and sediment control BMPs include designs, procedures, and physical products and structures.

An example of a design BMP is designing the project to minimize disturbance of existing vegetation.

A procedural BMP to control erosion might involve phasing project work.

Physical BMPs can include stormwater ponds, erosion control blankets, silt fences, and applying straw mulch for ground cover.

get added to the *Qualified Products List* and become available for use by WSDOT engineers. The basis for final BMP selection at a project construction site includes the site's conditions and constraints.

Certification and Training

As previously mentioned in the SPCC section above, WSDOT requires each of its construction contractors to have a certified Erosion and Sediment Control Lead. This Lead, responsible for implementing spill prevention and erosion and sediment control activities on WSDOT projects, must receive certification training from a provider approved by the Department of Ecology. WSDOT also requires all internal site inspectors to receive certification if they collect discharge samples from a construction site. All of the certification training courses include one day in class followed by a day in the field installing BMPs.



The permit requires training WSDOT personnel and consultants involved in designing or inspecting TESC plans and tracking the number of courses offered and number of participants in the courses. In this reporting period, WSDOT scheduled 11 *Construction Site Erosion and Sediment Control Courses*. Of those, three cancellations occurred due to low enrollment, and one cancellation occurred because of a snow storm. In the 7 courses offered, 120 WSDOT personnel and consultants participated. After the training, the participants understood the regulatory framework for construction activities, spill prevention techniques, factors affecting soil erodibility, proper erosion and sediment control BMPs, and the TESC planning process.

Figure 6

Contractors laid erosion control blankets on long, steep slopes at the Port of Tacoma Project (April 2011).

During the fall TESC plan implementation and effectiveness assessment, WSDOT verifies the certification status of the Erosion and Sediment Control Lead for each project. The permit requires this verification. Of the 22 projects included, only one project could not demonstrate proof of the Lead's certification because the Erosion and Sediment Control Lead was not present at the time of the assessment.

Fall Effectiveness Assessment

During September through mid-November every year, WSDOT performs a statewide TESC plan implementation and effectiveness assessment. WSDOT assesses all active construction projects posing a moderate to high risk of erosion. WSDOT identifies these project sites based on the amount of disturbed soil, slope length and gradient, soil type, and proximity to receiving surface water bodies. The assessments occur in the fall to allow time for the deficiencies to be corrected before heavier winter rain, which can increase the potential for erosion.

In the fall of 2010, WSDOT assessed 22 construction projects. We evaluated each site based on implementation of the TESC plan elements, responsiveness to changing field conditions, and BMP effectiveness. Where TESC plan or BMP inadequacies were found, WSDOT followed up with the project office to provide technical assistance on improving the construction site's preparedness for the wet weather season. The permit requires WSDOT to report a summary of the results of the fall assessment. Table 4 below provides the summary for the 2010 assessment compared to previous years' assessments.

Table 4 Results of 2010 TESC Fall Assessment

TESC Assessment Measure	Percent of Projects Found to be Acceptable						Performance Status*
	2005	2006	2007	2008	2009	2010	
Control flow rates	95	72	93	93	93	100	Improved
Protect cut & fill slopes	79	56	83	100	64	71	Improved
Dewatering (removing water from soils)	100	100	100	100	100	100	Stable
Sediment control BMPs installed on time	95	61	92	93	100	100	Stable
Delineate clearing limits	95	94	90	100	100	100	Stable
Manage project erosion/sediment control BMPs proactively	90	92	90	98	97	93	Stable
Channels for temporary stormwater conveyance are stabilized	87	59	92	100	87	83	Stable
Storm drain inlet protection	86	93	92	100	86	83	Stable
Access routes to prevent tracking of mud onto streets	82	94	81	86	94	86	Decreased
Erosion control BMPs installed on time (stabilize soils)	86	56	83	80	93	86	Decreased
Control other pollutants from impacting water quality	100	89	93	100	100	82	Decreased
Maintain BMPs	67	44	81	93	88	77	Decreased

*Stable performance status indicates measures within 5% of the previous years' rating.

Lessons Learned from Fall Effectiveness Assessment

Source control provides the first line of defense against water quality problems associated with uncontrolled erosion and sediment from construction sites.

Sediment control refers to the second line of defense and includes efforts to trap displaced sediment before it has the opportunity to leave the construction site.

In the 2010 Stormwater Report, we identified the need to improve proactive planning for protecting cut and fill slopes. The table above shows WSDOT succeeded in improving the performance results for this assessment measure. However, other assessment measures showed decreased performance. Effective erosion and sediment control depends on TESC planning as well as proper installation and maintenance of BMPs. WSDOT needs to put a stronger emphasis on the importance of the timely installment and maintenance of erosion control BMPs to realize improved performance results in the future.

WSDOT also needs to increase proactive planning efforts for access routes to the construction project site to prevent tracking mud and sediment from the site onto streets. This source control measure, if performed effectively, can prevent soils from shifting and eroding, and decrease the resources necessary for sediment control. Further, WSDOT needs to improve our efforts for controlling other pollutants related to construction activities from adversely impacting water quality. The 2010 performance for this measure was the lowest since 2005. This could have resulted from poor source control, but also could be affected by improper development or implementation of the SPCC plan for each construction project.



Chapter 5 - Stormwater Infrastructure

New Facilities

Planning and Designing New Facilities

Constructing new facilities or modifying existing facilities requires planning and designing stormwater management BMPs to minimize adverse affects to water resources. WSDOT manages the planning and design of these BMPs by using the Highway Runoff Manual (HRM) and Hydraulics Manual. These documents provide consistent design procedures statewide and meet the level of stormwater management established by the Department of Ecology's stormwater management manuals.

Training WSDOT staff and consultants who perform stormwater management BMP design work helps ensure the design procedures in the documents are understood and used. The permit requires WSDOT to report the number of training opportunities for, and staff attendance of, HRM training. WSDOT held two training courses during this reporting period. In those classes, 15 WSDOT staff and 23 others, including consultants and personnel from local governments, attended. In addition, we had an online training class, which 2 WSDOT staff and 15 others completed.

The permit also requires WSDOT to conduct an annual audit of 10 percent of projects that have consultants involved in stormwater facility design. This audit assesses how many of these consultants received HRM training or worked under someone who received the training. WSDOT requires all consultants involved in stormwater BMP design to complete HRM training, and in the audit of projects awarded in this reporting period, all of the consultants listed as the designers had done so.

When selecting stormwater management BMPs for a project, the designer considers treatment options as well as ongoing maintenance and operation costs. After selecting permanent stormwater management BMPs for a project, the HRM directs the designer to contact the region maintenance office to discuss these. Some BMPs can only be used with the written consent of the Region Maintenance Engineer and the Region Hydraulics Engineer. These processes help involve maintenance staff in the stormwater facility design and approval process, a requirement of the permit.

Low Impact Development

The permit requires WSDOT to use Low Impact Development (LID) techniques for new facilities where feasible. These techniques include non-structural, preventative actions and pollution source reduction approaches. WSDOT's HRM outlines a process for selecting BMPs for new facilities that guides designers to investigate the feasibility of using LID and to choose LID BMPs before other, non-LID BMPs. The HRM training classes also emphasize using LID BMPs.

As required by the permit, WSDOT identifies barriers to implementing LID and tries to take actions to remove those that we identify. WSDOT has identified both physical and regulatory barriers to implementing LID. Physical barriers generally relate to site constraints. Our transportation facilities tend to be long and narrow. Thus, in many instances there may not be enough area to infiltrate all of the stormwater runoff from our facilities. Some physical barriers relate to safety constraints. Many LID BMPs require soils with high infiltration rates. Often, these soils, too soft to support the weight of vehicles, cannot be placed in recovery zones along the sides of the roads. In addition, some LID BMPs require planting specific vegetation. WSDOT's planting options can be limited due to sight distance and obstruction concerns.

WSDOT identified some of the LID BMP design criteria as regulatory barriers. In particular, the margins of safety factored into BMP design criteria have been arbitrarily set in most cases, with little or no supporting technical or scientific basis. These criteria generally translate into requiring larger areas for LID BMPs, which then become physical barriers to their use in a highway setting.

WSDOT continually works with the Department of Ecology to develop new BMPs and revise design standards and modeling techniques so that we can use LID in more locations. We also research various LID BMPs to quantify their effectiveness and prove or disprove the margins of safety currently assigned to them. Further, WSDOT published *WSDOT Strategies Regarding Preservation of the State Road Network*. This report addressed the use of pervious pavements on the WSDOT transportation system.

Consulting with the Services

The permit requires WSDOT to consult with the National Oceanic and Atmospheric Administration Fisheries and the U.S. Fish and Wildlife Service (Services) for specific projects. The specific projects include those located in western Washington in areas with potential adverse stormwater impacts to ESA-listed fish species. The projects

LID attempts to mimic natural hydrologic processes, and minimizes the creation of impervious surface and the disturbance of soils and vegetation.

requiring consultation are those that construct new impervious surfaces, and do not have federal funding or other nexus, and thus do not require consultation under Section 7 of the ESA. There were no projects in this reporting period meeting these criteria.

Tracking New Facilities

WSDOT has had procedures in place requiring project offices to submit field-verified contract plans (as-builts) to the headquarters office as a component of the project closeout process since March 2009. The permit requires these procedures to be in place by March of 2011, so we met this obligation well in advance.

By March of 2014, the permit requires WSDOT to begin entering key features and locations of newly constructed stormwater facilities into a database. The permit also requires WSDOT to audit 10 percent of new projects to verify these facilities are entered in the database correctly beginning in March 2014. To fulfill these requirements, WSDOT is looking into alternatives to make the as-built submission process more automated and to import the information from the as-builts directly into the Stormwater Features Inventory Database.

Ongoing efforts exist to maintain all information related to transportation features in a digital format. This collaborative effort involves WSDOT's Environmental Services Office, the Computer Aided Engineering Office, the Office of Information Technology, the Transportation Data Office, the Maintenance Office, and the Design and Construction Office. We want to store and maintain digital information from the design through construction phases, as well as post-construction maintenance and modification information, in the Highway Features Database. The Highway Features Database will be automatically populated with information from the Stormwater Features Inventory Database among other databases. By storing data in a central database, WSDOT reduces duplication of effort and allows users to access a broader range of information about our transportation features.

The Highway Features Database provides the connection between several WSDOT programs that collect different information on the same highway feature. In this reporting period, WSDOT constructed 243 BMPs statewide, 87 of which are within the areas covered by the permit. Table 5 below summarizes the number and types of BMPs built at each project that added new impervious surface and exceeded the thresholds to comply with stormwater management requirements in areas covered by the permit. The full list of stormwater BMPs built statewide during this reporting period appears in Appendix 1, at the end of this report.

Table 5 Stormwater Facilities Built in Areas Covered by the Permit in the 2011 Reporting Period

Project Name	Region	Infiltration ¹	Dispersion ²	Biofiltration ³	Wet Pool ⁴	Other ⁵	Total
I-5 Chuckanut Park and Ride	Northwest			2			2
I-5, Marysville to Stillaguamish River Bridge - Med	Northwest			14	1		15
SR 2 Safety Improvements	Northwest			1			1
SR 11, I-5 Interchange - Josh Wilson Rd Rebuild In	Northwest			6	1		7
SR 520, West Lake Sammamish Parkway Flyover Ramp	Northwest	1		1	1		3
SR 520/W Lake Sammamish Pkwy To SR 202 HOV and SR	Northwest			11			11
SR 539, Horton Rd to 10 Mile Road Widen to Five Lanes	Northwest				4		4
I-5, Port of Tacoma Road to King County Line - HOV	Olympic			2			2
I-5, Martin Way O'Xing Bike Lanes	Olympic				1		1
I-82, Terrace Heights Off Ramp Improvments	South Central	4					4
US 12, Frenchtown to Walla2, Add Lanes	South Central	22	3				25
SR 503 Lewisville Park Vic Climbing Lanes	Southwest			3			3
Vancouver Rail Project W 39th Street Bridge	Southwest	3				1	4
I-90/Two Way Transit HOV Operations - Stage 1	UCO			5			5
	Total	30	3	45	8	1	87

1. Infiltration includes: Bioinfiltration Trench, Infiltration Pond, Infiltration Swale, Infiltration Vault, and Drywell.

2. Dispersion includes: Natural Dispersion, and Engineered Dispersion.

3. Biofiltration includes: Wet Biofiltration Swale, Vegetated Filter Strip, Compost Amended Vegetated Filter Strip, and Media Filter Drain.

4. Wet Pool includes: Constructed Stormwater Treatment Wetland - Detention Pond, Combined Stormwater Treatment Wetland/Detention Pond, Constructed Stormwater Treatment Wetland, Combined Wet/Detention Pond, and Detention Pond.

5. Other includes: Hydrodynamic Separator

Retrofits

Why and When Retrofits Occur

Most of WSDOT's highways and facilities were built before the federal CWA and the Washington Water Pollution Control Act were enacted. Thus, most of the older pavement surfaces do not have facilities to control stormwater flows or treat stormwater runoff before it discharges from our right of way. We address these deficiencies by prioritizing highway segments that either do not have any, or have substandard treatment or flow control, for retrofit.

The permit requires highway projects in the Puget Sound basin that add new impervious surfaces and exceed the threshold to comply with stormwater management requirements to meet different project-triggered retrofit requirements than in the rest of the state. For these types of projects, all existing impervious surfaces within the project limits must be retrofitted if feasible and cost-effective in locations identified as medium to high priority for retrofits.

Three alternatives exist in the event that retrofitting is not feasible or cost-effective. These alternatives include retrofitting the existing impervious surface, retrofitting an equivalent amount of existing impervious surface off-site, or transferring money to fund stand-alone retrofit projects in high priority locations. Regardless of the alternative chosen, an amount of money equal to 20 percent of the cost to meet stormwater requirements for the new impervious surface must be spent. For applicable highway projects in the Puget Sound basin in low priority locations, WSDOT must transfer money to fund stand-alone retrofits.

Prioritization Process

WSDOT developed a retrofit prioritization process to focus stormwater retrofit investments in areas of the greatest need, maximize immediate benefits by targeting areas with the highest benefits relative to cost, and reduce cost by identifying opportunities to combine retrofits with construction projects. The prioritization process results in designating areas as low, medium, and high priority. Areas are retrofitted in order of their priority ranking score through WSDOT's stand-alone stormwater retrofit program.

The retrofit prioritization process consists of three major steps. Each step builds off the previous one.

Step 1 involves screening the entire state using GIS to identify areas that present greater than average risks for highway stormwater runoff.

Step 2 involves field inventory to identify areas with closed conveyance systems, known high habitat value, and erosion or pollution problems.

Step 3 involves collecting detailed site information to determine drainage areas and estimate costs to retrofit the area.

Stand-alone Retrofit Funding

The permit requires WSDOT to report our biennial budget request for stand-alone stormwater retrofits to the Legislature in our annual stormwater report. Table 6 below shows how much we requested for the biennium, how much the Legislature approved, and how much we spent on stand-alone retrofits during the biennium.

Table 6 Stand-alone Retrofit Funding for the 2009-2011 Biennium

Funding Requested	Funding Approved	Spent in 2010	Spent in 2011	Total Spent
\$2,878,277	\$2,878,277	\$551,000	\$290,000	\$841,000

The Legislature fully funded WSDOT's biennial budget request for stand-alone stormwater retrofits. Our expenditures did not match the full funding amount for the biennium for several reasons. Some projects overestimated design and construction costs, while other projects found ways to reduce costs during the project's design and construction phases. Further, some projects did not spend as much money as expected due to permitting or other delays. These delayed retrofit projects are expected to continue spending their remaining balances in future reporting periods, until project completion.

Completed projects that did not cost as much as expected returned excess funds to the Legislature. During this biennium, the Legislature changed the amount available to fund the stand-alone stormwater retrofit program as well. Even accounting for the legislative changes to the stand-alone stormwater retrofit budget, the program still spent less than our total approved due to project cost savings realized.

As explained above, for highway projects in the Puget Sound basin that add new impervious surfaces, exceed the threshold to comply with stormwater management requirements, and that are located in medium to high priority retrofit areas, all existing impervious surfaces within the project limits must be retrofitted if feasible and cost-effective. For retrofitting work carried out under this requirement that was deemed infeasible or non-cost-effective, the permit requires WSDOT to report the cost information used and describe where and how much retrofitting took place. During this reporting period, there were no applicable retrofit projects pertaining to this reporting requirement.

WSDOT builds stand-alone, project-triggered, and opportunity-based retrofits to address stormwater treatment and flow control deficiencies of older pavement surfaces.

The permit also requires WSDOT to report how much money we transferred from projects in low priority locations in the Puget Sound basin to fund stand-alone retrofit projects in high priority locations. Again, in this reporting period, there were no applicable projects related to this requirement.

Tracking Retrofits

WSDOT uses the Design Documentation Spreadsheet to track retrofits, including the amount of acres retrofitted or reverted back to pervious surfaces. The spreadsheet, required by the 2008 HRM and 2009 Hydraulics Manual, documents whether a retrofit is stand-alone, project-triggered, or opportunity-based. WSDOT is developing a database to replace the spreadsheet. The database will allow WSDOT to easily query information the permit requires us to report.

The permit requires WSDOT to report the number of stand-alone retrofits we completed. Although we are constructing stand-alone retrofits, none were completed during this reporting period. The permit also requires us to report the number of acres of existing impervious surface retrofitted or reverted to pervious surface through stand-alone, project-triggered, and opportunity-based retrofit projects. This information appears in Table 7 below. The permit requires WSDOT to separately report the acreage of off-site project-triggered retrofit obligations incurred and accomplished through the retrofit alternative option for the Puget Sound basin described above. No projects used this alternative during this reporting period.

Table 7 Acres of Existing Impervious Surface Retrofitted or Reverted to Pervious

State Route	Mile Post	Region	County	Project Name	Existing Impervious Surface Retrofitted (acres)	Existing Impervious Surface Reverted to Pervious (acres)	Reason for Retrofit
5	109.15	Olympic	Thurston	I-5, Martin Way O'Xing Bike Lanes	1.7	0	Project-triggered
5	136.02 - 139.21	Olympic	Thurston	I-5, Port of Tacoma Road to King County Line - HOV	4.25	0	Opportunity-based

Stormwater Features Inventory

Populating the Database

In 1993, WSDOT began building an inventory of its stormwater management infrastructure in the Puget Sound Basin. Currently, WSDOT inventories its stormwater-related facilities to help document their locations, set level of service targets for maintenance activities, identify deficiencies and illicit discharges, and help prioritize retrofits. Our inventory efforts involve researching and entering information from construction as-built plan sets into our Stormwater Features Inventory Database. They also include field-based documentation of new information using Global Positioning System (GPS) units.

The Stormwater Features Inventory Database was completed and made operational by the permit deadline, March 2011. This database holds data collected by the Stormwater Features Inventory Program through both field and office processes. While no data was entered into the Stormwater Features Inventory Database during this reporting period, we focussed our efforts on quality control checks of existing data sets that will get merged into the database.

Progress on Mapping Discharge Points and BMPs

The permit requires WSDOT to map and document all known discharge points and structural stormwater treatment and flow control BMPs in the permit coverage area and enter them into the Stormwater Features Inventory Database by March of 2014. All known existing stormwater BMPs have been mapped, and the data set receives updates to include newly identified and constructed BMPs. By the end of this reporting period, WSDOT conducted a complete stormwater discharge inventory on 17 percent of highways within the permit coverage area.

We categorize the status of the data into complete and partial because the inventory documentation definitions changed during the process of collecting the data. The definitions changed, in part, due to the permit's information requirements changing from our previous general permits' requirements. "Complete" discharge point inventory refers to identified discharge points with attributes documented under the revised procedures. "Partial" discharge point inventory indicates incomplete data under the revised procedures. WSDOT previously described all discharge points as outfalls, which implied all discharge points discharge

Figure 7

WSDOT field crew performing stormwater discharge point inventory with a GPS unit (September 2011).



to surface water. Under revised procedure definitions, WSDOT collected about 9,826 discharge points during this reporting period. As WSDOT completes the stormwater discharge inventory on the highways in the permit coverage area, the data gets merged into the Stormwater Features Inventory Database.

Registering Underground Injection Control Facilities

The last category of discharge points listed above, Subsurface Discharges, includes stormwater features that function as Underground Injection Control (UIC) wells. Under the UIC Program (Chapter 173-218 WAC), discharges of fluids into UIC wells are regulated to prevent groundwater contamination. This regulation, as well as the permit, requires WSDOT to ensure that UIC facilities meet the non-endangerment performance standard defined in the WAC. This requires WSDOT to register all known existing UIC facilities with the Department of Ecology by February 2011, and assess all known existing UICs by February 2013. The regulations also require ongoing registration of new UIC facilities.

To meet these requirements, WSDOT developed a UIC Registration and Assessment Database. All known UIC facilities were registered with the Department of Ecology and entered in this database by the deadline of February 2011. WSDOT anticipates completing assessments on time.

Mapping Connection Points

As reported in the 2010 Stormwater Report, WSDOT began mapping these connection points of stormwater systems along boundaries that we share with municipalities in May 2009. Although we initiated this program before the required date of March 2011, a lot of work still remains to complete this data collection. In this reporting period, WSDOT coordinated and shared data with the cities of Renton, Olympia, Bonney Lake, and Auburn, and Mason County.

Updated GIS Layers

In this reporting period, the Stormwater Features Inventory Program updated discharge points layers for our Geographic Information System (GIS). In addition, the Roadside Features Inventory Program updated the curbs, culverts, ditches, drainage inlets, and roadside slope layers that the Stormwater Features Inventory Program uses as a basis for continued inventory efforts.

Illicit Discharge Detection and Elimination

Illicit Discharge Detection and Elimination Program

WSDOT's Illicit Discharge Detection and Elimination (IDDE) Program identifies and eliminates illicit discharges and illegal connections that could adversely affect our stormwater system or property. WSDOT holds landowners adjacent to our right of way responsible for preventing pollution and treating stormwater before it leaves their property. However, WSDOT does not have regulatory authority over adjacent landowners, so enforcing this responsibility presents challenges. We take whatever steps possible, up to blocking and containing the flow. We also work with the Department of Ecology and municipalities when an issue cannot be resolved directly with a landowner. WSDOT contacts emergency responders when coming upon a potentially hazardous or unknown pollutant.

IDDE Program Improvement

As required by the permit, WSDOT's IDDE Program trains discharge inventory field crews as well as maintenance and construction crews to recognize illicit discharges and connections. Signs of an illicit discharge can include staining, residues, oily substances, odors, abnormal flow during a dry weather period, turbid waters, or suds. The permit also requires us to track all issues and seek remediation when necessary. To improve the program's efficiency and responsiveness during this reporting period we:

Up to 81 attributes can be associated to each feature inventoried. Attributes can include physical information, use information, and the accuracy of collection method.



Figure 8

WSDOT field crews identified this illicit connection on State Route 531 (2011).

- Developed a web-based application for staff to easily report IDDE issues.
- Developed a database to track and document IDDE events and actions.
- Designated an IDDE contact in each of WSDOT's six regions and developed a standard notification system for IDDE reporting and coordination.
- Collaborated efforts and developed relationships with other permitted municipalities to resolve IDDE issues more quickly.
- Developed new processes and procedures for IDDE detection and reporting.
- Trained more WSDOT staff on how to identify and report IDDE issues.
- Developed a stormwater accommodation policy that reinforces the IDDE Program.

New Reported Illicit Discharges

WSDOT discovered 12 illegal connections and 1 illicit discharge during this reporting period. We resolved the discharge, removed 5 illegal connections, and permitted 3 connections. We are still working to remove or permit 4 of the illegal connections found in this reporting period. A detailed table describing the discharges and connections, actions WSDOT took to eliminate them, the status of the issues appears in Appendix 2, at the end of this report.



Chapter 6 - Road and Facility Maintenance and Operations

Maintenance and Operations

How the Permit Affects Maintenance

The permit covers about 1,600 centerline miles of highways, and requires SWPPPs for 11 rest areas, 31 maintenance facilities, and 11 park and ride lots. Maintenance and operational activities on these WSDOT roads and facilities constitute a major obligation in our overall program for managing stormwater. Using BMPs for maintaining and operating roads and facilities helps maximize roadway safety, prolong the life of highways and facilities, and improve the efficiency and effectiveness of managing stormwater. Key maintenance activities required by the permit include:

- Developing an annual inspection program for catchbasins and permanent BMPs.
- Maintaining permanent BMPs and correcting deficiencies as applicable.
- Reporting the levels of service delivered for routine stormwater-related maintenance like street sweeping and ditch and culvert maintenance.
- Writing and implementing SWPPPs.
- Training maintenance staff on stormwater pollution awareness, BMP maintenance, and SWPPP implementation.
- Reporting the amounts of de-icer and herbicides used.
- Reporting the amount of litter removed.

Levels of Service

Maintenance Accountability Process

WSDOT uses Level of Service (LOS) as a measure to describe the physical condition of transportation infrastructure. WSDOT and the Legislature cooperatively set target LOS ratings for specific maintenance and

operation activities on WSDOT roadways and facilities. Once a year, WSDOT performs field inspections on randomly chosen sections of highway to determine the LOS delivered for these activities. The field inspections and subsequent documentation and comparison of the results against the targets are a part of WSDOT's Maintenance Accountability Process (MAP). MAP is one of several processes WSDOT uses to track progress on service delivery and to strategically plan and prepare budgets for maintenance and operations.

Level of Service Delivered

WSDOT measures LOS with an "A" through "F" scale, similar to grading. While LOS is typically used to describe the physical condition of transportation infrastructure, we use it to describe stormwater-related transportation features. The permit requires WSDOT to include a comparison of the LOS data determined by the random condition inspections to the target LOS in our Stormwater Report. In each of the subsections addressing maintenance or operational activities below, there is a brief discussion of WSDOT's service delivery grade for that activity if WSDOT and the Legislature set a target LOS for it.

Highway Maintenance and Operations

Spill Prevention and Containment

If WSDOT maintenance employees encounter a collision or other incident on a highway, their main role calls on them to manage traffic and only take emergency actions required to protect human life and property. However, maintenance personnel trained to take actions to prevent a release of small quantities of petroleum products into water bodies will do so. WSDOT works with the Washington State Patrol, the Department of Ecology, and local emergency responders to coordinate any clean-up of spilled substances.

Street Sweeping

WSDOT actively removes pollutant materials from roadways to prevent sediment, leaves, paper, and other debris from entering stormwater, stormwater conveyance and treatment systems, and receiving surface water bodies. One method we use to remove these materials involves mechanical sweeping. The sweeping schedule depends on the target LOS and on debris build-up over time. For this reporting period, the LOS target for street sweeping was B+. According to MAP, WSDOT delivered this service at an A level.

In this reporting period, WSDOT attained all but one target LOS related to stormwater. Culvert maintenance, which had a target delivery of D+, received a D for its service delivery grade based on field inspections. While this represents an improvement from last year's D-, it still did not meet the target LOS.

Snow and Ice Control

In addition to sediment and other debris, de-icer can be a pollutant found on roadways. WSDOT only uses de-icing agents on the *Pacific Northwest Snowfighter Association's* list of approved products. The association provides specifications for the highest quality products which balance protecting the environment and providing the safest possible transportation network for travelers during snow and ice conditions.

WSDOT seeks to prevent the formation or development of packed snow or ice through a combination of mechanical plowing and applying de-icing salts. WSDOT also uses sand in some situations to provide improved traction. The *Snow and Ice Plan* provides more details on specific goals and guidance for WSDOT's snow and ice control maintenance program.

The permit requires WSDOT to report the total de-icer materials used statewide during the reporting period. WSDOT's Winter Operations Database tracks the location, weather conditions, and the amount of de-icing product being used. Table 9 shows the amount of de-icer product used during this reporting period.

Table 8 Total De-icer Materials Used in the 2011 Reporting Period Compared to Previous Years

Reporting Period	Solid De-icer (tons)	Liquid De-icer (tons)
2009	56,261	23,709
2010	41,225	13,982
2011	73,745	14,489

Regional Road Maintenance Program

The Regional Road Maintenance ESA Program Guidelines describe physical, structural, and managerial BMPs that, when used singularly or in combination, reduce adverse affects from road maintenance activities on receiving water quality and habitat conditions. WSDOT maintenance employees identify ESA-sensitive areas and have used Personal Digital Assistants (PDAs) and the ESA Compliance Database to document maintenance actions and ESA compliance since 2003.

Litter Control

Litter and other debris that mechanical sweepers do not pick up can become pollutants in stormwater runoff and clog stormwater management facilities. WSDOT maintenance staff pick up large debris and the bags of litter collected by volunteers and work groups. The groups who pick up litter along the highways include Adopt-a-Highway volunteers, Ecology Youth Corps work groups, and Department of Corrections work groups. The permit requires WSDOT to report the amount of litter removed from the right-of-way each year. Volunteers reported picking up more than 27,000 bags of litter. In addition, contractors hired by Adopt-a-Highway sponsors picked up an additional 6,000 bags of litter. This represents about 2,000 fewer bags than what was reported last year; however, several of the contractors used larger bags this year. Because the contractors remove and dispose the bags of litter they collect, WSDOT only tracks the cubic yards and tons of litter picked up by the volunteer groups and work groups and removed by us. Table 10 shows these amounts for this reporting period and the 2010 reporting period.

Table 9 Amount of Litter Collected in the 2011 Reporting Period Compared to 2010

Reporting Year	Number of Bags	Cubic Yards	Tons
2010	26,000	36,207	3,621
2011	27,000	48,460	4,846

Vegetation Management

Local and state laws require controlling some invasive species; however, desirable species also need maintenance near roadways to ensure adequate sight distance and safe roadway function. Uncontrolled, invasive plant species can have adverse long term economic and ecological affects on adjacent private and public lands. Vegetation can also adversely affect WSDOT's infrastructure including pavement, signs, guardrails, drainage systems, and stormwater features.

WSDOT uses a combination of the most effective and efficient methods to control undesirable vegetation, while encouraging the growth of desirable plants. This process is called Integrated Vegetation Management (IVM). IVM treatment methods include mowing and trimming, selectively applying herbicides, releasing weed-eating insects, improving

Figure 9

WSDOT uses an IVM approach to maintain plants along highways. This approach reduces maintenance needs and herbicide use over time.



soils, and planting native and desirable plants. We implement IVM by developing locally-based vegetation management plans. The plans identify priorities, prescribe treatment methods, and identify areas with specific geographic and environmental management considerations. Each year, WSDOT reviews and revises the plans based on observations and changing conditions. Throughout the year, area maintenance crews actively participate in reviewing the plans. Each spring, crews receive training to implement the plans.

The permit requires WSDOT to report the amount of herbicides used and number of acres treated annually. As reported last year, WSDOT reduced herbicide use by 70 percent between 2003 and 2007. Since 2007, the amount of herbicide used and number of acres treated has remained relatively stable. However, Table 11 shows that the herbicide use during this reporting period decreased slightly from the previous reporting period.

Table 10 Summary of Herbicides Used and Acres Treated

Reporting Year	Acres Treated	Pounds of Herbicides Applied
2009	22,946	35,041
2010	23,986	42,740
2011	21,953	40,801

Stormwater System Maintenance and Operations

Catch Basin Maintenance

WSDOT's first line of defense for preventing sediment and other pollutants from entering stormwater, stormwater conveyance and treatment systems, and receiving surface water bodies involves sweeping. Maintaining catchbasins is the next line of defense. Maintaining these structures includes inspecting, cleaning, and correcting deficiencies. Along with debris build-up, the target LOS currently dictates the maintenance schedule for catchbasins. The current target is set at D+. WSDOT delivered a LOS of C+ for this reporting period. The grade scale for LOS for catchbasins reflects those with more than 50 percent of their depth covered with sediment accumulation, or are otherwise deficient.

The permit requires WSDOT to routinely inspect all known catchbasins annually to identify maintenance needs and deficiencies beginning by March 2011. WSDOT's Maintenance Program implements a program to carry

out this work. We also ordered three new vactor trucks to vacuum the sediment and debris out of the catchbasins for which inspections revealed the need for cleaning. WSDOT tracks catchbasin inspections, cleanings, and corrective actions with the Highway Activity Tracking System (HATS). In the future, the HATS records can serve as justification for less frequent inspections if it demonstrates that maintenance standards can still be met.

Ditch and Culvert Maintenance

Maintaining ditches and culverts helps prevent pollutants from reaching receiving surface water bodies. It also maximizes their effectiveness at controlling runoff flow volumes and velocities. WSDOT routinely checks and maintains ditches to preserve the same slope, depth, and width with which they were constructed. Ditch maintenance includes inspections and removing sediment and vegetation. The target LOS for maintaining ditches is set at B. WSDOT attained a LOS of B+. The LOS grade scale for ditches reflects how many contain sediment more than 50 percent of the ditch's volume.

WSDOT maintains culverts to ensure they are clean and in good operating condition. The target LOS for culvert maintenance is currently set at D+. WSDOT delivered a LOS of D for culvert maintenance in this reporting period, which did not meet the target. The LOS grade scale for culverts reflects how many are more than 50 percent full of sediments or are otherwise blocked.

Treatment and Flow Control BMP Maintenance

The maintenance schedule for treatment and flow control BMPs currently depends on the accumulation of trash, debris, oil, and sediment as well as the LOS target. In this reporting period, WSDOT attained the target LOS of C for maintaining BMPs. The grade scale for LOS of BMPs reflects how many structures contain sediment accumulation of more than 25 percent of their depth.

The permit requires WSDOT to annually inspect permanent stormwater treatment and flow control BMPs beginning March 2012. To remain compliant with this requirement, WSDOT must inspect 95 percent of permanent BMP sites each year. These inspections may trigger the need for follow-up maintenance and corrective work. While an inspection program related to this requirement has not yet started, we have secured funds to start implementing



Figure 10

WSDOT maintenance staff use a vactor truck to vacuum the sediment and debris out of a catchbasin near milepost 50 on I-5.

an inspection program for permanent BMPs to meet the permit's compliance timeline. When they begin, WSDOT will document inspections in HATS along with any necessary follow-up maintenance activities and any needed capital improvements. The records in HATS may be able to serve as justification for less frequent inspections if they demonstrate that maintenance standards can still be met.

Facility Maintenance

Stormwater Pollution Prevention Plans

WSDOT uses SWPPPs to prevent the contamination of stormwater and control discharges of stormwater to receiving surface water bodies from rest areas, park and ride lots, maintenance facilities and ferry terminals. The plans identify operational source control BMPs and structural treatment and flow control BMPs to use at the facilities. When developing the plan, WSDOT ranked the structural BMP needs, so that they can be constructed based on their priority ranking. The plans also include site maps of the facilities showing stormwater conveyance systems and sources of possible pollutants.

The permit requires WSDOT to develop individual SWPPPs for rest areas and maintenance facilities that have MS4s, and where equipment is stored, vehicles can refuel, and repairs on heavy equipment and vehicles occurs. The permit also requires WSDOT to develop a programmatic SWPPP for park and ride lots with MS4s that we own and operate. As reported last year, WSDOT completed SWPPPs for 30 of the 31 maintenance facilities and a programmatic SWPPP covering the 11 park and ride lots that WSDOT owns and operates. WSDOT also completed SWPPPs for the remaining maintenance facility and all 11 rest areas by February 28, 2011. This met March 5, 2011 permit deadline.

After WSDOT completes the SWPPPs, the permit requires maintenance crews for each facility to receive training on the plans within three months. In the last Stormwater Report, we documented 517 maintenance staff who received SWPPP training within three months of completing the plans. WSDOT completed SWPPP training for maintenance crews by May 31, 2011, and thus within the required permit timelines. These trainings included 73 maintenance staff.

To ensure SWPPP implementation, and to evaluate the effectiveness of the plans, the permit requires WSDOT maintenance staff to perform site inspections twice a year. These include visual inspections of the facility and its stormwater discharges. WSDOT tracks inspections and documents their results in the Computerized Maintenance

Management System (CMMS). In this reporting period, WSDOT conducted SWPPP site inspections twice at all applicable facilities, meeting this permit requirement.

Capital Improvement Assistance to Local Governments

WSDOT considers it good policy to manage wastes responsibly and construct waste management facilities to accommodate the needs of multiple users. Since 1993, we have worked with local governments to build facilities for stockpiling and screening street sweeping wastes and decanting vector trucks involved in cleaning catchbasins. Typically, the local governments provide the site and design and operate the facility and WSDOT provides funding. In the last reporting period, an agreement was finalized with Cowlitz County to construct a vector decant and street sweeping facility. Delays occurred due to permitting, but construction is expected to begin this fall. The city of Moses Lake built a similar facility without WSDOT funds, but has agreed to allow WSDOT to use it for a fee. Just as proper maintenance of roadways can control pollution from running off roadways, proper street waste management at facilities can similarly reduce the pollution of stormwater runoff from those facilities.

Maintenance Training

In addition to training maintenance employees on the SWPPPs, the permit requires WSDOT to train 90 percent of new maintenance employees on stormwater related maintenance activities and spill response awareness within one year of employment. WSDOT's Maintenance Academy Training covers these topics among others. Staff who attend the Maintenance Academy Training learn about how routine maintenance activities and emergency response can affect stormwater and the environment. Courses covered in the Academy include:

- Field Training for Bridge Maintenance
- BMPs for in Water Work
- Emergency Response
- Roadway Surface Maintenance and Operations
- Roadside Vegetation Maintenance
- Drainage Facilities
- Reporting Requirements
- Snow and Ice Control
- Bridge Maintenance
- Disaster Workshop
- Annual Snow and Ice Training
- Annual Road and Street Maintenance School

WSDOT requires all new maintenance employees to complete Maintenance Academy Training. In this reporting period, all of the 19 new permanent employees and 15 new non-permanent employees completed the courses in the Academy within one year of their employment with WSDOT.



Chapter 7 - Washington State Ferries

How the Permit Affects WSF

The permit covers 11 WSF terminals. WSDOT's WSF Division performs most of the stormwater management activities required by the permit at ferry terminals. The permit requires WSF to:

- Write a programmatic SWPPP and integrate it into the Safety Management System (SMS).
- Maintain stormwater systems and BMPs.
- Track de-icing, sweeping, and vegetation management tasks.
- Train WSF employees on stormwater regulations and BMPs.

Ferry Terminal Maintenance and Operations

Stormwater Pollution Prevention Plan

SMS procedures include internal audits to help identify what works and what needs improvement. During this reporting period, corrective actions performed to improve identified weaknesses included replacing catchbasin filters and socks at some of the ferry terminals.

WSF has a SMS based on the International Safety Management Code. This Code provides international standards for the safe management and operation of ships and pollution prevention. The SMS policies and procedures integrate safety, security, and environmental management into everyday operations. WSF refines SMS through adaptive management as WSF staff provide recommendations, and internal and external audits identify areas requiring improvement.

In addition to the basic Safety Management System, WSF developed an Environmental Management System (EMS) patterned after international environmental management standards. The EMS, a subsection of the overall SMS, addresses illicit discharges and potential discharges of hazardous materials. As reported last year, the EMS and its procedures were fully integrated into the SMS by February 2009, well before the permit's deadline of March 2010.

When developing the SMS, Washington State Ferries included most of the permit requirements for stormwater pollution prevention. The permit requires WSF to write and implement a programmatic ferry terminal SWPPP

and integrate it with the SMS by the end of year two of the permit. When creating the SWPPP document, WSF conducted a gap analysis to identify elements missing from SMS necessary to address stormwater pollution. The gap analysis revealed most of the actions needed to address stormwater pollution prevention were already included in the existing procedures. However, an additional stormwater pollution prevention procedure was created to fill the identified gaps and ensure compliance with the permit.

WSF signed the completed programmatic SWPPP on March 4, 2011, meeting the deadline of March 5, 2011. Its policies and procedures are currently implemented through the SMS and a Fleet Advisory. WSF issues Fleet Advisories as interim mechanisms to enforce new procedures before formally entering them into the SMS. WSF enters new procedures into the SMS twice a year using a formal review process. WSF will formally integrate the new stormwater pollution prevention procedures into the SMS during the next formal review process.

Sweeping

WSF actively removes pollutant materials from impervious surfaces at ferry terminals as the primary method of preventing pollution from entering stormwater and receiving surface water bodies. WSF removes pollutant materials by mechanically vacuum sweeping sediments and picking up or mopping small leaks, such as leaks from vehicles waiting to board ferries. While staff clean up small leaks daily, sweeping occurs four times a year. WSF developed this schedule based on a review of acceptable operational BMPs such as those evaluated for the SR 520 floating bridge replacement project, information from the Federal Highway Administration and EPA urban BMP websites, the amount of traffic WSF terminals receive, and internal inspections.

Sweeping the terminals four times a year should be adequate to control the amount of sediment and debris entering catchbasins in the past. However, WSF will monitor catchbasin conditions through SWPPP inspections to determine if adjustments, such as increases in sweeping frequency, need to occur.

De-icing

In addition to sediment and leak materials, de-icer can be a pollutant source at ferry terminals. If snow or ice accumulates on ferry terminal surfaces WSF mechanically picks it up or melts it with salts. WSF only uses salt



Figure 11

Vehicles wait to board a ferry at a ferry terminal in Seattle.

products that are on the *Pacific Northwest Snowfighters Association's* list of approved products. WSF uses washed sand when weather conditions overwhelm the de-icing salts. Once the weather conditions pass, WSF picks up the residual salt and sand with dry methods. Then WSF uses wet methods to clean the area. WSF stores the sand and salts on pallets and under cover at the ferry terminals.

Vegetation Management

Where landscaping exists, WSF manages contracts for maintaining the ferry terminal's vegetation through mechanical mowing, trimming, weeding, and minimal spot applications of herbicide to remove noxious weeds. The biofiltration swales at the Anacortes, Tahlequah, and Southworth ferry terminals are trimmed at least twice a year. During this reporting period, mechanical vegetation removal occurred at Anacortes, Tahlequah, Southworth, and Bainbridge ferry terminals. The Anacortes terminal also received an herbicide application to remove poisonous water hemlock.

Stormwater Facility Maintenance

Stormwater Management Control Structures

Because of the ferry terminals' proximity to Puget Sound, the permit does not require WSF to use stormwater flow control structures at the terminals. Stormwater features at ferry terminals include conveyance systems, oil-water separators, catchbasins, catchbasin inserts, and biofiltration swales. However, stormwater features vary significantly from terminal to terminal. WSF systematically maintains stormwater management facilities based upon inspections and indications of need. During this reporting period, inspections occurred at all of the terminals and cleaning, including cleaning oil-water separators, occurred at some of the terminals.

Maintenance Productivity Enhancement Tool

WSF uses a Maintenance Productivity Enhancement Tool (MPET) to generate work orders and track, monitor, facilitate completion of, and catalogue results for all maintenance activities. WSF integrated maintenance activities for stormwater features, sweeping, and vegetation management activities into MPET, as required by the permit. MPET also received updates based on additional stormwater features identified during the stormwater features inventory conducted in the winter of 2010-2011 as a part of the SWPPP development process.

Weekly terminal inspections are conducted to ensure BMPs are functioning as intended in the SWPPP. In addition, a formal annual inspection conducted by engineering maintenance staff will provide information on the condition of stormwater management facilities such as catchbasins and stormwater control structures.

The permit requires revising MPET as necessary. While no revisions were made during this reporting period, WSF continually refines maintenance schedules and procedures as information becomes available. The ability to continually add and refine information helps make MPET an effective adaptive management tool. The SWPPP, requiring engineering maintenance staff to conduct annual inspections, will also feed into the effectiveness of MPET's adaptive management process. For example, MPET issues work orders for preventative maintenance activities on set schedules and corrective maintenance work identified during inspections. WSF adjusts preventative maintenance schedules in MPET to maximize the balance between available resources and identified maintenance needs.

Training

WSF takes a programmatic approach to stormwater training that, over time, will fulfill permit requirements as well as operational needs. In addition to the permit requirements addressed in this report, WSF must also meet requirements of the Industrial Stormwater General Permit at the Eagle Harbor maintenance and repair facility, and EPA's Vessel General Permit. The requirements contained in all three of these permits guides WSF's stormwater training approach. Using a programmatic approach allows WSF to train its staff while meeting the operational demands related to nearly 500 scheduled daily sailings and the schedules of staff who work at ferry terminals.

Typically, new employees go through an extensive training introduction and internship. Terminal staff receive training every two years, and vessel staff receive training every year. All employees have taken at least an introductory stormwater training session. The minimum stormwater-related training requirements for WSF staff include:

- Understanding of CWA and the three stormwater permits.
- Why stormwater pollution prevention is important.
- Generic concepts of stormwater pollution prevention.
- Applicable SMS policies and procedures.
- BMPs specific to the job and work area.

WSF uses multiple techniques to cover these topics over time. These techniques include self-teaching through manuals, computer-based courses, videos, lectures, and specific in-the-field procedural training. Due to budget

In this reporting period, WSF updated the spill clean up training videos. Further, 15 terminal engineering staff received additional spill containment and clean up training.

constraints, WSF now trains terminal supervisors on the job individually and develops more training materials for self-taught individual instruction. The terminal supervisors are responsible for training their staff.

The permit requires 90 percent of new employees to receive training on spill containment and clean up and stormwater control procedures and applicable state and federal regulations. WSF did not hire any new employees during this reporting period; however, all existing WSF staff received this training through the minimum training requirements discussed above. Training on the SMS addresses stormwater control procedures and includes specific procedures on spill response and portable spill kits. Training covering the SMS and the three stormwater permits address applicable state and federal regulations.



Chapter 8 - Monitoring and Research

Stormwater Quality Monitoring

Monitoring Objectives and Requirements

The permit requires WSDOT to develop and implement a monitoring program to produce scientifically credible data that can help determine the effectiveness of stormwater management strategies and SWPPPs.

WSDOT is preparing to monitor the following required components:

- Baseline stormwater monitoring and sediment characterization at 5 highway sites.
- Baseline stormwater monitoring at 2 rest areas, 6 maintenance facilities, and 1 ferry terminal.
- Effectiveness monitoring of at least 2 types of stormwater treatment BMPs, including at least 2 sites for each BMP type, and 1 flow reduction BMP.
- Toxicity testing the seasonal first flush at 3 highway sites and 3 BMP sites.

Before WSDOT begins monitoring, the permit requires us to submit and obtain approval for Quality Assurance Project Plans (QAPPs) for each component above. The permit also requires WSDOT to obtain approval from the Department of Ecology for each monitoring site. Full implementation of the monitoring program must begin by September 6, 2011. Further, by March 5, 2012, WSDOT is required to develop and begin populating and maintaining a monitoring database which must link to the Stormwater Features Inventory Database.

Progress on Meeting Monitoring Requirements

A QAPP describes the objectives of the study and the procedures necessary to achieve the objectives. This ensures that the quality and integrity of collected data and results are representative, accurate, and complete. In order to meet the permit requirements and the objectives for monitoring, WSDOT prepared draft QAPPs to address the specific monitoring requirements for highways, maintenance facilities, rest areas, ferry terminals, and BMPs. WSDOT submitted the draft QAPPs to the Department of Ecology's Water Quality Program on

September 2, 2010. This was in time to meet the permit deadline of September 6, 2010. The three QAPPs submitted were:

- Baseline Monitoring of WSDOT Highway Runoff
- Baseline Stormwater Monitoring of WSDOT Maintenance Facilities, Rest Areas, and Ferry Terminals
- WSDOT Roadway Stormwater Treatment Evaluation: Best Management Practices

The QAPPs for baseline highway monitoring and BMPs also cover the toxicity testing for the seasonal first flush.

The Department of Ecology reviewed the draft QAPPs and returned comments on two of them in December 2010. In January 2011, WSDOT received comments on the BMPs QAPP. After WSDOT revised and resubmitted the QAPPs in March and April 2011, the Department of Ecology conditionally approved them on March 14 and April 4. The Department of Ecology based the approvals for the QAPPs on the baseline monitoring of highway runoff, maintenance facilities, rest areas, and ferry terminals on the condition that WSDOT complete the process of selecting laboratories to analyze samples taken for monitoring. The conditional approval for the QAPP on BMP effectiveness monitoring requires WSDOT to address specific issues in a finalized QAPP and submit it to the Department of Ecology by September 6, 2011.

WSDOT used appropriate sections of the Department of Ecology's Technology Assessment Protocol (TAPE) to prepare for BMP effectiveness monitoring. In order to obtain approval for the site selections for the BMP effectiveness monitoring sites, the TAPE process required WSDOT to collect total suspended solids (TSS) and particle size distribution (PSD) data. This data helps determine if pollutant concentration levels entering proposed BMP monitoring sites are enough to be treatable. WSDOT collected TSS and PSD samples at all of the proposed BMP monitoring sites on March 30, 2011. These samples were analyzed by the Department of Ecology's Manchester Environmental Laboratory on April 4. The results indicate there are high enough concentrations of pollutants for the stormwater to be treatable at all of the sites.

As reported in the 2010 Stormwater Report, WSDOT received conceptual approval from the Department of Ecology for monitoring sites at 1 ferry terminal, 2 rest areas, 6 maintenance facilities, and 5 highway sites during the 2010 reporting period. Negotiations for the BMP monitoring sites continued in this reporting period, and the Department of Ecology approved the sites in April 2011. Construction and equipment installation at all of the monitoring sites is scheduled for completion

Figure 12

Stormwater monitoring station at the vegetated filter strip stormwater treatment BMP near Everett (December 2010).



by September 6, 2011 to allow WSDOT to begin full implementation of our monitoring program on time. The following monitoring sites were selected:

- Northbound I-5 at milepost 197, near Everett
 - 2 Baseline highway monitoring and sediment characterization locations
 - 1 Vegetated Filter Strip stormwater treatment BMP
 - 1 Modified Compost-blanket Vegetated Filter Strip stormwater treatment BMP
 - 1 Highway seasonal first flush toxicity testing site
 - 1 BMP seasonal first flush toxicity testing site

- Southbound I-5 at milepost 210, near Pilchuck Creek
 - 1 Baseline highway monitoring and sediment characterization location
 - 1 Vegetated Filter Strip stormwater treatment BMP
 - 1 Modified Compost-blanket Vegetated Filter Strip stormwater treatment BMP
 - 1 Compost-amended Vegetated Filter Strip stormwater flow reduction and treatment BMP
 - 1 Highway seasonal first flush toxicity testing site
 - 1 BMP seasonal first flush toxicity testing site

- Southbound Highway 9 at milepost 18, near Marysville
 - 1 Baseline highway monitoring and sediment characterization location
 - 1 Highway seasonal first flush toxicity testing site
 - 1 BMP seasonal first flush toxicity testing site

- Westbound I-90 at milepost 289, near Spokane
 - 1 Baseline highway monitoring and sediment characterization location

- Ferry Terminal
 - Bainbridge Island Ferry Terminal

- Rest Areas
 - Northbound Smokey Point Rest Area, near Arlington
 - Southbound Smokey Point Rest Area, near Arlington

- Maintenance Facilities
 - Ballinger Maintenance Facility, in Shoreline
 - Lakeview Maintenance Facility, in Lakewood
 - Vancouver Maintenance Facility, in Vancouver
 - Euclid Maintenance Facility, in Wenatchee
 - Geiger Maintenance Facility, in Spokane
 - Clarkston Maintenance Facility, in Clarkston

In the 2010 reporting period, WSDOT reported purchasing a database to store environmental data related to its stormwater monitoring data collection efforts. During this reporting period, WSDOT installed the EQUIS database and software and began customizing it to fulfill our data collection and reporting needs. WSDOT also purchased The Comprehensive Environmental Toxicity Information System (CETIS) software to manage the bioassay data for stormwater monitoring. We will collect and manage hydrologic data, including precipitation, stage, and water temperature data, with our StreamTrac database from the Forest Technology Systems (FTS).

The EQUIS database stores geographic coordinates of monitoring sample locations. WSDOT will use these coordinates as a link to the Stormwater Features Inventory Database through GIS. The Stormwater Features Inventory Database includes a dataset to represent the monitoring site areas. WSDOT has yet to enter the monitoring site information into this dataset. However, populating the dataset with the site information will give WSDOT the ability to create maps showing monitoring results and their associated sample sites.

Stormwater Research

Stormwater Research Strategy Tool

WSDOT relies on research to identify innovative, cost-effective solutions for designing, building, and maintaining stormwater management systems. We use a Stormwater Research Strategy to prioritize research needs related to stormwater. This strategy:

- Helps coordinate and build partnerships within WSDOT and at the regional, state, and federal levels to leverage stormwater research resources.
- Provides a clear process for soliciting, submitting, prioritizing, and implementing research proposals related to stormwater.
- Helps find solutions that improve the design, constructability, maintainability, cost effectiveness, hydraulic performance, and treatment efficiency of stormwater facilities, as well as stormwater management operations and maintenance practices.
- Improves the process of compiling, tracking, and disseminating stormwater research findings.

Stormwater Technical Review Committee

The Stormwater Technical Review Committee is one of the Research Advisory Committees that submits research projects to WSDOT's Research Office and other entities for funding consideration. The Stormwater Technical Review Committee met once during this reporting period. It reviewed six proposals. The following four were funded:

- Steep Slope BMPs for Western Washington
- Stormwater Storage
- Stormwater Model Comparison
- LID and Transportation Stormwater Practices

WSDOT's specific stormwater research priorities tend to shift every few years.

However, the following four core research areas will likely remain the same:

Characterizing the properties of stormwater runoff.

Characterizing the environmental effects of stormwater runoff.

Developing methods to avoid, minimize, buffer, or mitigate stormwater runoff effects.

Developing new procedures and design tools.

Coordination

Coordination with local, state, and national programs facilitates research partnerships and information sharing. WSDOT maintains communication and coordinates with these and other stormwater programs to share resources, promote and conduct stormwater research, and stay up to date on stormwater research developments and innovations. We currently participate in two National Cooperative Highway Research Program (NCHRP) research projects that are exploring BMP development for highly urbanized areas. WSDOT is also a member of the Transportation Research Board's Committee on Hydrology, Hydraulics, and Water Quality, which includes stormwater research in its portfolio. Further, we participate in the American Association of State Highway and Transportation Officials (AASHTO) Stormwater Community of Practice, which may sponsor research efforts.

Status of Current Research Projects

The permit requires WSDOT to report on the status of our research activities and summarize the findings of completed projects. While we completed one stormwater research project during this reporting period, WSDOT has several stormwater research projects in progress.

WSDOT completed and published the *Eastern Washington Steep Slope Research for Management of Highway Stormwater* in May 2011. This project examined sheet flow BMPs, such as vegetated filter strips and dispersion, along highways with embankments. WSDOT inventoried 45 sites in eastern Washington for design criteria and site characteristics that contribute to concentrating stormwater runoff and eroding the embankment. The research showed vegetation coverage and a high percentage of sand in the embankment were better indicators of potential erosion severity than slope of the embankment alone. Further, the slope of the embankment is not the only contributing factor to concentrating stormwater flows. The conditions at the edge of the pavement can also affect stormwater flow and channelization, which can result in erosion. The conclusions in the report recommend adjusting design criteria to allow these types of BMPs on embankments with slopes up to 33 percent depending on other site characteristics. The report can be accessed on WSDOT's Research website. WSDOT will also present these results to the Department of Ecology as part of the HRM revision process.

One research project in progress is located along State Route 518. We completed initial monitoring of a compost amended bioswale at that location and submitted the Technical Evaluation Report for the initial monitoring to the Department of Ecology in March. We responded to the comments we received, and will likely be granted General Use Level Designation for Basic and Enhanced treatment.

WSDOT is currently modifying an research project which involves monitoring a modified media filter drain on Interstate 405. Initial monitoring showed the modified media filter drain design was not meeting the requirements for removing dissolved copper, so WSDOT proposed adjustments. The Department of Ecology approved the modifications. Monitoring the effectiveness of the adjustments made is expected to resume in fall 2011.

WSDOT also has a research project underway comparing the performance of a vegetated filter strip, a compost-amended vegetated filter strip, and a modified compost-blanket vegetated filter strip. This project is partnering with the stormwater monitoring efforts described above at the Everett and Pilchuck Creek sites. Monitoring is expected to begin in fall 2011.

Dissemination of Research Findings

The permit requires WSDOT to post our technical reports on our website. The research project reports are also made a part of the WSDOT Library and the Transportation Research Information Services database. This database is a part of the National Transportation Library and provides access to over 900,000 records of transportation research worldwide. As described above, WSDOT posted the *Eastern Washington Steep Slope Research for Management of Highway Stormwater* technical report on our Research website.



Chapter 9 - Public Outreach, Education, and Involvement

Permit Requires Knowledge and Technology Transfer and Outreach

WSDOT, a recognized leader in stormwater management, can inform development of regulations, guidance, and policy at the national, state, and local levels through our experiences and knowledge. WSDOT continually works on research devoted to developing and improving stormwater management techniques, guidance manuals, training courses, and design tools. WSDOT shares these and other information on stormwater with government agencies, consultants, contractors, non-profit organizations, and the public. This occurs through our participation in and presentations to committees, work groups, and action teams. WSDOT also educates and involves the public in pollutant source reduction through opportunities like our Adopt-a-Highway and Commute Trip Reduction programs.

The permit requires WSDOT to support and provide technical assistance to the Adopt-a-Highway and Commute Trip Reduction programs. It also requires us to support knowledge and technology transfer related to stormwater management through presentations, publications, and participation in stormwater committees. Further, the permit requires WSDOT to maintain and expand our internet sites to help disseminate information, and regularly e-mail updates of the HRM to those signed up to receive updates. The subsections below summarize the efforts WSDOT made related to these permit requirements.

Summarization of Efforts

Adopt-a-Highway

As described in the Litter Control section of the Road and Facility Maintenance and Operations chapter of this Stormwater Report, litter and other debris can become pollutants in stormwater and clog stormwater management facilities. WSDOT's Adopt-a-Highway program allows individuals, organized groups, and businesses to help keep our stormwater clean by picking up the litter along the highways. When volunteer groups agree to "adopt" a section of highway for four years, WSDOT installs a sign at the beginning of that section identifying the adopting group. WSDOT also provides the necessary traffic control equipment, safety equipment, safety training, and litterbags. Although WSDOT collects and disposes most of the bags filled by volunteers, organizations and businesses that sponsor sections of highway usually hire contractors to pick up and dispose of the litter.

Currently, 1,100 volunteer groups and 177 sponsors have adopted sections of Washington state highways. Volunteer groups and sponsors submit activity reports to help WSDOT track how many hours volunteers work and how much litter they pick up. In this reporting period, volunteers reported working more than 21,000 hours and picking up more than 27,000 bags of litter. Contractors hired by sponsors picked up an additional 6,000 bags of litter. While this amounts to about 2,000 fewer bags than reported last year, several of the contractors used larger bags this year.

Only about 50 percent of volunteer groups submitted activity reports the last few years. In this reporting period, WSDOT sent letters to all of the groups who failed to submit activity reports. The letters notified the groups that if they do not report litter collection activities, WSDOT will make the site available for other volunteer groups to adopt. To help improve the activity report submittal rate, WSDOT developed a website where volunteer groups can submit activity reports online. We have already seen a higher reporting rate with this new online reporting.

Commute Trip Reduction

WSDOT works with local governments and employers to implement Commute Trip Reduction (CTR) techniques. These include subsidies for public transit fares and carpooling, flexible work schedules, and telecommute opportunities. With WSDOT's technical support and help from the online tools available at rideshareonline.com, CTR employers continue to outperform the state and nation in reducing drive-alone commuting.

WSDOT set a goal to reduce the number of trips made by people driving alone solely for their commute by 10 percent between 2007 and 2012. We also set a goal to reduce the number of miles each employee travels to their work site by 13 percent between 2007 and 2012. Progress made toward these goals helps WSDOT reduce traffic congestion, air pollution, and fuel consumption. Removing vehicles from the roadways and reducing the emissions that enter the atmosphere, in turn, helps improve water quality by reducing the amount of pollutants deposited on the roadway and entering our stormwater systems.

Internet Site

WSDOT uses our websites to share information and knowledge to the public. We disseminate stormwater-related information by posting links to our annual Stormwater Reports, guidance documents, manuals, and procedures, design tools, research, and contact information for staff.

In this reporting period, the CTR employee survey showed that compared to the 2010 survey:

The drive alone rate to work sites participating in CTR fell by 5 percent.

The miles traveled by each employee to their work site fell by 5.7 percent.

CTR removed about 15,700 vehicles from the roadways each morning.

Annual carbon dioxide emissions fell by 68,700 metric tons.

Annual fuel consumption fell by 7.5 million gallons.

During this reporting period, WSDOT made a number of updates to our website. These included:

- Updating the IDDE website by:
 - Adding images.
 - Updating contact information.
 - Adding a link to the Field Inspection Checklist used by WSDOT field staff to document and report illicit connections and discharges.
 - Removing the Discharge Monitoring Report template upon request from the Department of Ecology. The template, meant for WSDOT users, had been inappropriately used and submitted to the Department of Ecology by non-WSDOT reporters.
- Posting the 2010 Stormwater Report after it was submitted to the Department of Ecology in October 2010.
- Posting the 2010 HRM, along with descriptions of changes made to it.
- Posting HRM training opportunities.
- Updating links to newly completed Roadside Vegetation Management Plans on the Maintenance website.
- Posting the results of the Maintenance Program's annual inspections of randomly selected sections of highway.
- Posting the March, 2011 issue of the Gray Notebook, WSDOT's quarterly accountability report, including a section about stormwater activities performed.

Public Involvement

In addition to the Adopt-a-Highway and Commute Trip Reduction programs and our web sites, WSDOT involves the public in several other ways. As required by the Department of Ecology, the 2010 permit modification process included a public comment and review period. WSDOT also welcomes public review and comment on our Roadside Vegetation Management Plans at any time. We regularly hold public meetings and hearings for specific transportation projects and solicit public review of environmental impact statements and environmental assessments developed for projects.

E-mail Updates

WSDOT keeps a list of e-mail addresses for people who request to receive announcements regarding HRM updates and training. Regular e-mail updates serve as an effective tool for getting timely information to WSDOT staff, consultants, regulators, and local governments who use the HRM. During this reporting period, e-mail updates included information on post-publication updates, training opportunities, modeling software updates, and employment opportunities.

Knowledge and Technology Transfer

In addition to sharing information and knowledge with others, WSDOT greatly benefits from the information shared during events and from committees and work groups we participate in.

In fall 2010, WSDOT's Highway Runoff Program Manager gave a presentation at the Project Engineers Statewide Meeting on WSDOT's HRM and LID. The Highway Runoff Program Manager gave another presentation twice with WSDOT's Northwest Region Office, and a Department of Ecology liaison regarding constructed stormwater wetland design and construction. These were given at the Northwest Region Design and Construction Conference in February 2011.

In 2010, the Legislature directed WSDOT to explore and explain the potential use of permeable pavements as a stormwater mitigation method in state highway construction and its potential effects on pavement replacement needs. We worked with the Department of Ecology, the County Road Administration Board, and the Transportation Improvement Board and documented the findings of a search of available literature related to this topic. In September 2010, WSDOT published the resulting report, *WSDOT Strategies Regarding Preservation of the State Road Network: A Report to the State Legislature in Response to SB 6381*.

WSDOT also publishes completed research projects. Descriptions of research projects published during this reporting period appears in Chapter 8.

One of the best ways to share knowledge and technology between agencies, organizations, and the private sector is through actively participating in work groups, advisory groups, committees, and partnerships. WSDOT participates in many of these groups including:

- Permit coordination and implementation:
 - Phase I Permit Coordinators.
 - Puget Sound Regional NPDES Permit Coordinators.
 - South Sound Phase II Group.
 - Southwest Washington Managers and Coordinators.
 - Eastern Washington Phase II Municipal Stormwater Permit Coordinators.
 - Stormwater Technical Advisory Committee with the cities of Olympia, Lacey, Tumwater, and Thurston County.
 - Regional Operations and Maintenance Program.
 - Street Maintenance Solids Meetings.
 - Standard Operating Procedures Working Group.
 - Phase I Monitoring.

- National Committees and Advisory Groups:
 - AASHTO.
 - Transportation Research Board's NCHRP.
 - TransNow.
 - Transportation Research Board Committees on Hydrology, Hydraulics and Water Quality, and Landscape and Environmental Design.

- State and Regional Committees and Advisory Groups:
 - American Public Works Association Stormwater Managers Committee.
 - Stormwater Technical Resource Center Advisory Committee.
 - Stormwater Workgroup for the Puget Sound.
 - Technology Assessment Protocol - Ecology (TAPE) Stakeholder Advisory Group.
 - Local Jurisdiction Stormwater Monitoring Caucus.
 - American Society of Civil Engineers Water Resources Committee.
 - Puget Sound Regional Council Stormwater Charter Committee.
 - Water Quality Partnerships.
 - Puget Sound Partnership State Agency Caucus.
 - Stormwater Retrofit Planning Project for Washington State Water Resource Inventory Area (WRIA) 9 Stakeholder Workshop.

Table 11 Stormwater Facilities Built Statewide During the 2011 Reporting Period

State Route	Mile Post	Offset Direction	Offset Distance	Region	Project Name	BMP Type	Facility Size (sqft)	In Permit Area	Data Year
002	223.69	R	28	North Central	US 97/South FO Chelan Falls Passing Lane	Dispersion	N/A	No	2011
002	223.84	R	28	North Central	US 97/South FO Chelan Falls Passing Lane	Dispersion	N/A	No	2011
002	222.86	R	28	North Central	US 97/South FO Chelan Falls Passing Lane	Natural Dispersion	N/A	No	2011
002	223.72	R	28	North Central	US 97/South FO Chelan Falls Passing Lane	Natural Dispersion	N/A	No	2011
002	223.87	R	28	North Central	US 97/South FO Chelan Falls Passing Lane	Natural Dispersion	N/A	No	2011
002	28.58	N/A	0	Northwest	Safety Improvements	Detention Vault (FC 03)	N/A	No	2011
002	17.96	N/A	0	Northwest	Safety Improvements	Media Filter Drain (RT.07)	N/A	Yes	2011
002	22.86	N/A	0	Northwest	Safety Improvements	Media Filter Drain (RT.07)	N/A	No	2011
002	28.58	N/A	0	Northwest	Safety Improvements	Media Filter Drain (RT.07)	N/A	No	2011
005	231.10	L	-13	Northwest	Chuckanut Park & Ride	Wet Biofiltration Swale (RT.05)	N/A	Yes	2011
005	231.03	R	50	Northwest	Chuckanut Park & Ride	Wet Biofiltration Swale (RT.05)	N/A	Yes	2011
005	276.00	N/A	0	Northwest	I-5, Blaine Exit Interchange Improvements	Biofiltration Swale (RT.04)	N/A	No	2011
005	276.00	N/A	0	Northwest	I-5, Blaine Exit Interchange Improvements	Biofiltration Swale (RT.04)	N/A	No	2011
005	199.35	L	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Combined Stormwater Treatment wetland/ Detention Pond (CO.02)	N/A	Yes	2011
005	199.35	R	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Compost Amended Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	199.35	R	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Compost Amended Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	199.35	R	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Compost Amended Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	199.35	R	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Compost Amended Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	199.35	R	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Compost Amended Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	199.35	R	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Compost Amended Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	199.35	R	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Compost Amended Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	199.35	R	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Compost Amended Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	199.35	R	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Compost Amended Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	199.35	L	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Wet Biofiltration Swale (RT.05)	N/A	Yes	2011
005	199.35	L	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Media Filter Drain (RT.07)	N/A	Yes	2011
005	199.35	L	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Media Filter Drain (RT.07)	N/A	Yes	2011
005	199.35	L	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Media Filter Drain (RT.07)	N/A	Yes	2011

Statewide Stormwater BMP Table

Appendix 1

State Route	Mile Post	Offset Direction	Offset Distance	Region	Project Name	BMP Type	Facility Size (sqft)	In Permit Area	Data Year
005	199.35	R	0	Northwest	I-5, Marysville To Stillaguamish River Bridge- Med	Media Filter Drain (RT.07)	N/A	Yes	2011
005	231.10	N/A	0	Northwest	SR 11, I-5 Interchange - Josh Wilson Rd Rebuild In	Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	231.10	N/A	0	Northwest	SR 11, I-5 Interchange - Josh Wilson Rd Rebuild In	Vegetated Filter Strip (RT.02)	N/A	Yes	2011
005	231.00	N/A	0	Northwest	SR 11, I-5 Interchange - Josh Wilson Rd Rebuild In	Biofiltration Swale (RT.04)	N/A	Yes	2011
005	231.20	N/A	0	Northwest	SR 11, I-5 Interchange - Josh Wilson Rd Rebuild In	Biofiltration Swale (RT.04)	N/A	Yes	2011
005	109.15	R	240	Olympic	I-5, Martin Way O'Xing Bike Lanes	Constructed Stormwater Treatment Wetland - Detention Pond	N/A	Yes	2011
005	136.02	L	-1	Olympic	I-5, Port Of Tacoma Road To King County Line - Hov	Media Filter Drain	N/A	Yes	2011
005	136.02	R	1	Olympic	I-5, Port Of Tacoma Road To King County Line - Hov	Media Filter Drain	N/A	Yes	2011
011	0.10	L	-121	Northwest	SR 11, I-5 Interchange - Josh Wilson Rd Rebuild In	Detention Pond (FC.03)	N/A	Yes	2011
011	0.10	R	116	Northwest	SR 11, I-5 Interchange - Josh Wilson Rd Rebuild In	Detention Pond (FC.03)	N/A	No	2011
011	0.10	N/A	0	Northwest	SR 11, I-5 Interchange - Josh Wilson Rd Rebuild In	Biofiltration Swale (RT.04)	N/A	Yes	2011
011	0.10	N/A	0	Northwest	SR 11, I-5 Interchange - Josh Wilson Rd Rebuild In	Biofiltration Swale (RT.04)	N/A	Yes	2011
012	191.09	L	-130	South Central	Us 12, Allan Rd - Intersection Improvements	Dispersion	7500.00	No	2011
012	191.17	L	-130	South Central	Us 12, Allan Rd - Intersection Improvements	Dispersion	20000.00	No	2011
012	191.09	L	-25	South Central	Us 12, Allan Rd - Intersection Improvements	Dispersion	30000.00	No	2011
012	191.17	L	-25	South Central	Us 12, Allan Rd - Intersection Improvements	Dispersion	30000.00	No	2011
012	191.17	R	25	South Central	Us 12, Allan Rd - Intersection Improvements	Dispersion	7500.00	No	2011
012	191.09	R	25	South Central	Us 12, Allan Rd - Intersection Improvements	Dispersion	20000.00	No	2011
012	334.99	L	-97	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Dispersion	44160.00	Yes	2011
012	335.02	R	22	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Dispersion	1776.00	No	2011
012	334.91	R	22	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Dispersion	6876.00	Yes	2011
012	335.39	R	47	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Dispersion	16800.00	Yes	2011
012	335.37	L	-375	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	133.39	No	2011
012	335.32	L	-315	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	482.43	No	2011
012	335.13	L	-250	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	223.94	No	2011
012	335.16	L	-238	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	259.35	No	2011
012	335.29	L	-130	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	737.06	No	2011
012	335.37	L	-125	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	930.43	Yes	2011
012	335.29	R	90	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	932.61	No	2011

State Route	Mile Post	Offset Direction	Offset Distance	Region	Project Name	BMP Type	Facility Size (sqft)	In Permit Area	Data Year
012	335.39	R	205	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	2019.57	Yes	2011
012	335.33	R	210	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	1111.28	Yes	2011
012	335.39	R	545	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	246.56	Yes	2011
012	335.35	R	572	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	352.59	Yes	2011
012	335.22	R	675	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	187.24	No	2011
012	335.26	R	684	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Pond	69.33	No	2011
012	328.83	L	-1830	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.47	No	2011
012	328.83	L	-1830	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.93	No	2011
012	332.76	L	-1623	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.95	No	2011
012	332.78	L	-1590	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.43	No	2011
012	332.94	L	-1185	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.69	No	2011
012	333.11	L	-1050	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.33	No	2011
012	333.08	L	-966	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	9.87	No	2011
012	328.99	L	-660	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	7.50	No	2011
012	333.22	L	-530	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.76	No	2011
012	330.82	L	-480	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.42	No	2011
012	333.17	L	-480	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	5.44	No	2011
012	333.22	L	-450	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.76	No	2011
012	330.59	L	-435	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.61	No	2011
012	333.33	L	-380	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	14.47	No	2011
012	330.59	L	-370	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	2.22	No	2011
012	330.81	L	-360	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.67	No	2011
012	330.82	L	-360	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.67	No	2011
012	330.78	L	-245	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.25	No	2011
012	329.04	L	-245	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.92	No	2011
012	330.73	L	-180	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.38	No	2011
012	328.18	L	-175	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.10	No	2011
012	329.02	L	-174	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.92	No	2011
012	328.96	L	-146	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	9.00	No	2011

State Route	Mile Post	Offset Direction	Offset Distance	Region	Project Name	BMP Type	Facility Size (sqft)	In Permit Area	Data Year
012	329.02	L	-131	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	13.95	No	2011
012	330.78	L	-131	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	14.78	No	2011
012	329.21	L	-127	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	6.71	No	2011
012	331.97	L	-122	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	6.70	No	2011
012	330.64	L	-121	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.70	No	2011
012	333.38	L	-119	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.89	Yes	2011
012	328.71	L	-119	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	12.50	No	2011
012	331.56	L	-119	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	2.23	No	2011
012	328.21	L	-119	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	2.50	No	2011
012	330.97	L	-119	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.70	No	2011
012	333.66	L	-119	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.89	Yes	2011
012	333.84	L	-119	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.89	Yes	2011
012	334.08	L	-119	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.89	Yes	2011
012	329.85	L	-119	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	4.30	No	2011
012	329.76	L	-119	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	6.37	No	2011
012	335.70	L	-75	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	2.46	Yes	2011
012	335.71	L	-75	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	4.76	Yes	2011
012	332.69	L	-45	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	18.82	No	2011
012	334.61	L	-45	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	90.21	Yes	2011
012	333.27	L	-44	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	5.32	No	2011
012	329.38	L	-43	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	2.30	No	2011
012	330.27	L	-43	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	11.95	No	2011
012	328.44	L	-42	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	13.93	No	2011
012	329.47	L	-42	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	7.35	No	2011
012	332.61	L	-41	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	15.49	No	2011
012	328.65	L	-40	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	15.56	No	2011
012	329.77	L	-36	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.30	No	2011
012	334.56	L	-35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	150.74	Yes	2011
012	327.37	L	-35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	16.36	No	2011

State Route	Mile Post	Offset Direction	Offset Distance	Region	Project Name	BMP Type	Facility Size (sqft)	In Permit Area	Data Year
012	333.90	L	-34	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	419.13	Yes	2011
012	327.81	L	-34	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.30	No	2011
012	327.68	L	-33	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.39	No	2011
012	327.72	L	-33	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.39	No	2011
012	333.58	L	-33	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	186.70	Yes	2011
012	328.10	L	-30	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	5.92	No	2011
012	327.63	L	-26	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	4.17	No	2011
012	328.05	L	-25	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	5.24	No	2011
012	328.00	L	-16	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.76	No	2011
012	329.04	R	30	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	4.38	No	2011
012	331.16	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.28	No	2011
012	331.28	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.28	No	2011
012	333.15	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.94	No	2011
012	328.56	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.00	No	2011
012	328.19	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.60	No	2011
012	333.54	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.82	Yes	2011
012	333.94	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.82	Yes	2011
012	334.08	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.82	Yes	2011
012	334.24	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.82	Yes	2011
012	334.25	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.89	Yes	2011
012	328.23	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	4.70	No	2011
012	331.31	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	5.81	No	2011
012	330.99	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	6.40	No	2011
012	334.33	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	6.47	Yes	2011
012	333.29	R	35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	11.46	No	2011
012	333.77	R	36	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.82	Yes	2011
012	332.65	R	37	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	3.57	No	2011
012	327.95	R	46	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	8.80	No	2011
012	333.03	R	47	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	13.57	No	2011

State Route	Mile Post	Offset Direction	Offset Distance	Region	Project Name	BMP Type	Facility Size (sqft)	In Permit Area	Data Year
012	330.74	R	68	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	13.34	No	2011
012	330.76	R	75	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	8.96	No	2011
012	331.26	R	78	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	2.46	No	2011
012	329.04	R	235	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.62	No	2011
012	333.12	R	360	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.79	No	2011
012	333.12	R	360	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.98	No	2011
012	330.73	R	830	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.74	No	2011
012	330.73	R	870	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.74	No	2011
012	329.04	R	980	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.83	No	2011
012	329.02	R	1000	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	0.74	No	2011
012	333.12	R	1040	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	1.33	No	2011
012	328.94	R	1100	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	10.11	No	2011
012	333.26	R	1400	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	10.23	No	2011
012	332.77	R	1610	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Swale	2.68	No	2011
012	328.95	L	-39	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Trench	100.00	No	2011
012	333.14	L	-35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Trench	88.89	No	2011
012	329.10	L	-35	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Infiltration Trench	133.33	No	2011
012	335.37	L	-385	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Swale	0.69	No	2011
012	335.37	L	-375	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Swale	0.69	No	2011
012	335.32	L	-325	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Swale	0.69	No	2011
012	335.32	L	-315	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Swale	0.69	No	2011
012	327.23	L	-15	South Central	Us 12, Frenchtown To Walla2, Add Lanes	Swale	2397.00	No	2011
012	176.57	L	-36	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Dispersion	1233.63	No	2011
012	176.60	L	-31	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Dispersion	338.33	No	2011
012	176.62	L	-31	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Dispersion	507.60	No	2011
012	177.04	L	-30	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Dispersion	43.35	No	2011
012	177.20	L	-28	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Dispersion	1178.40	No	2011
012	176.40	L	-27	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Dispersion	5400.00	No	2011
012	176.60	R	25	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Dispersion	183.30	No	2011

State Route	Mile Post	Offset Direction	Offset Distance	Region	Project Name	BMP Type	Facility Size (sqft)	In Permit Area	Data Year
012	176.62	R	25	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Dispersion	507.60	No	2011
012	177.31	R	36	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Dispersion	23.38	No	2011
012	177.24	R	37	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Dispersion	23.45	No	2011
012	176.95	L	-32	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Engineered Dispersion	1100.00	No	2011
012	176.88	L	-26	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Engineered Dispersion	2325.00	No	2011
012	177.24	R	37	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Engineered Dispersion	47.00	No	2011
012	177.04	R	59	South Central	Us 12, Tieton River Crossings W & E- Replace Bridg	Engineered Dispersion	367.60	No	2011
022	1.92	L	-16	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	2800.00	No	2011
022	1.41	L	-16	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	34200.00	No	2011
022	1.99	L	-16	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	12120.00	No	2011
022	2.26	L	-16	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	32640.00	No	2011
022	1.56	L	-15	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	11520.00	No	2011
022	2.08	L	-15	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	12120.00	No	2011
022	19.20	R	14	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	2800.00	No	2011
022	1.56	R	14	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	11520.00	No	2011
022	1.41	R	14	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	34200.00	No	2011
022	1.84	R	15	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	3600.00	No	2011
022	1.99	R	15	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	12120.00	No	2011
022	2.08	R	17	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	12120.00	No	2011
022	2.26	R	17	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Dispersion	32640.00	No	2011
022	2.69	L	-28	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Infiltration Trench	205.00	No	2011
022	2.63	L	-28	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Infiltration Trench	226.00	No	2011
022	2.75	L	-28	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Infiltration Trench	495.00	No	2011
022	1.84	L	-23	South Central	Sr 22, I-82 To Toppenish - Irrigation Phase 1b	Infiltration Trench	175.00	No	2011
082	33.26	R	395	South Central	I-82, Terrace Heights Off Ramp Improvements	Bioinfiltration Trench	25.46	Yes	2011
082	33.26	R	635	South Central	I-82, Terrace Heights Off Ramp Improvements	Bioinfiltration Trench	14.47	Yes	2011
082	33.26	R	785	South Central	I-82, Terrace Heights Off Ramp Improvements	Bioinfiltration Trench	14.47	Yes	2011
082	33.26	R	935	South Central	I-82, Terrace Heights Off Ramp Improvements	Bioinfiltration Trench	11.57	Yes	2011
090	2.76	N/A	0	UCO	I-90 / Two Way Transit HOV Operations - Stage 1	Media Filter Drain	N/A	Yes	2011

State Route	Mile Post	Offset Direction	Offset Distance	Region	Project Name	BMP Type	Facility Size (sqft)	In Permit Area	Data Year
539	2.13	R	75	Northwest	SR 539, Horton Rd to 10 Mile Road Widen to Five Lanes	Combined Wet/Detention Pond (CO.01)	N/A	Yes	2011
539	4.08	R	75	Northwest	SR 539, Horton Rd to 10 Mile Road Widen to Five Lanes	Combined Wet/Detention Pond (CO.01)	N/A	No	2011
539	5.74	R	75	Northwest	SR 539, Horton Rd to 10 Mile Road Widen to Five Lanes	Combined Wet/Detention Pond (CO.01)	N/A	No	2011
539	2.50	R	90	Northwest	SR 539, Horton Rd to 10 Mile Road Widen to Five Lanes	Combined Wet/Detention Pond (CO.01)	N/A	Yes	2011
539	2.72	L	-300	Northwest	SR 539, Horton Rd to 10 Mile Road Widen to Five Lanes	Wet Pond (RT.12)	N/A	No	2011
539	4.30	L	-80	Northwest	SR 539, Horton Rd to 10 Mile Road Widen to Five Lanes	Wet Pond (RT.12)	N/A	No	2011
542	33.45	L	-60	Northwest	Gallup Creek Bridge Replacement	Engineered Dispersion (FC.02)	N/A	No	2011
542	33.37	L	-45	Northwest	Gallup Creek Bridge Replacement	Infiltration Trench (IN.03)	N/A	No	2011
542	38.68	L	-30	Northwest	SR 542, Ced/ E Church Mt Rd-Roadway Realignment	Continuous Inflow Biofiltration Swale (RT.06)	N/A	No	2011
542	39.00	L	-30	Northwest	SR 542, Ced/ E Church Mt Rd-Roadway Realignment	Continuous Inflow Biofiltration Swale (RT.06)	N/A	No	2011
542	38.89	N/A	0	Northwest	SR 542, Ced/ E Church Mt Rd-Roadway Realignment	Continuous Inflow Biofiltration Swale (RT.06)	N/A	No	2011
542	39.03	R	30	Northwest	SR 542, Ced/ E Church Mt Rd-Roadway Realignment	Continuous Inflow Biofiltration Swale (RT.06)	N/A	No	2011
542	38.73	R	20	Northwest	SR 542, Ced/ E Church Mt Rd-Roadway Realignment	Media Filter Drain (RT.07)	N/A	No	2011
N/A-City Street		N/A	0	Southwest	Vancouver Rail Project W. 39th Street Bridge	Hydrodynamic Separator	N/A	Yes	2011
N/A-City Street		N/A	0	Southwest	Vancouver Rail Project W. 39th Street Bridge	Infiltration Vault	N/A	Yes	2011
N/A-City Street		N/A	0	Southwest	Vancouver Rail Project W. 39th Street Bridge	Infiltration Pond	N/A	Yes	2011
N/A-City Street		N/A	0	Southwest	Vancouver Rail Project W. 39th Street Bridge	Drywell	N/A	Yes	2011



Table 12 Summary of IDDE Issues and Remediation Activities

Region	Date Identified	Type of Discharge	Discovery	Location	Action Taken	Other Information	Current Status
Northwest	9/7/2010	Connection	Found by nearby construction crew	Highway: 900 Milepost: 21.75	Contacted landowner	Parking lot of private business cut gap in curb to connect with WSDOT stormwater system	Permitted
Northwest	9/8/2010	Connection	Found by nearby construction crew	Highway: 900 Milepost: 21.75	Contacted landowner	Parking lot of private business cut gap in curb to connect with WSDOT stormwater system	Permitted
Northwest	1/25/2011	Discharge/Spill	Discovered while performing inventory	Highway: 525 Milepost: 8.42	Worked with city and WSF to resolve	A private business placed a dumpster near WSDOT catch basin, used cooking oil and other trash leaked into the structure.	Resolved
Northwest	3/1/2011	Connection	Discovered while performing inventory	Highway: 9 Milepost: 5.103	Contacted landowner	Incoming ditch from private residence to WSDOT MS4	In Progress
Northwest	6/1/2011	Connection	Discovered while performing inventory	Hwy: 99 MP: 47.02	Contacted county and city	Private business discharges to WSDOT MS4	In Progress
Northwest	6/16/2011	Connection	Found during maintenance activity	Hwy: 531 MP: 4.4	Contacted county	Private residence connected to WSDOT ditch	In Progress
Olympic	11/14/2010	Connection	Discovered while performing inventory	Hwy: 167 MP: 4.5	Worked with land owner to get resolved	Private residence connected to WSDOT property	Removed
Olympic	11/16/2010	Connection	Discovered while performing inventory	Hwy: 16 MP: 12.20	Worked with city and WSDOT maintenance	Private residence connected to WSDOT property	Removed
Olympic	11/16/2011	Connection	Discovered while performing inventory	Hwy: 512 and Hwy: 7	Contacted landowner	Private residence connected to WSDOT property	Removed
Olympic	3/29/2011	Connection	Found during utility work	Hwy: 512 MP: 2.3	Contacted landowner	Private business discharges to WSDOT MS4	Removed
Olympic	3/29/2011	Connection	Found during utility work	Hwy: 512 MP: 2.3	Contacted landowner	Private business discharges to WSDOT MS4	Removed
Olympic	3/29/2011	Connection	Found during utility work	Hwy: 512 MP: 2.3	Contacted landowner	Private business discharges to WSDOT MS4	In Progress
Olympic	5/23/2011	Connection	Discovered while performing inventory	Hwy: 410 MP: 20	Worked with City of Buckley to get permit issued	Private business pond discharges to WSDOT MS4	Permitted